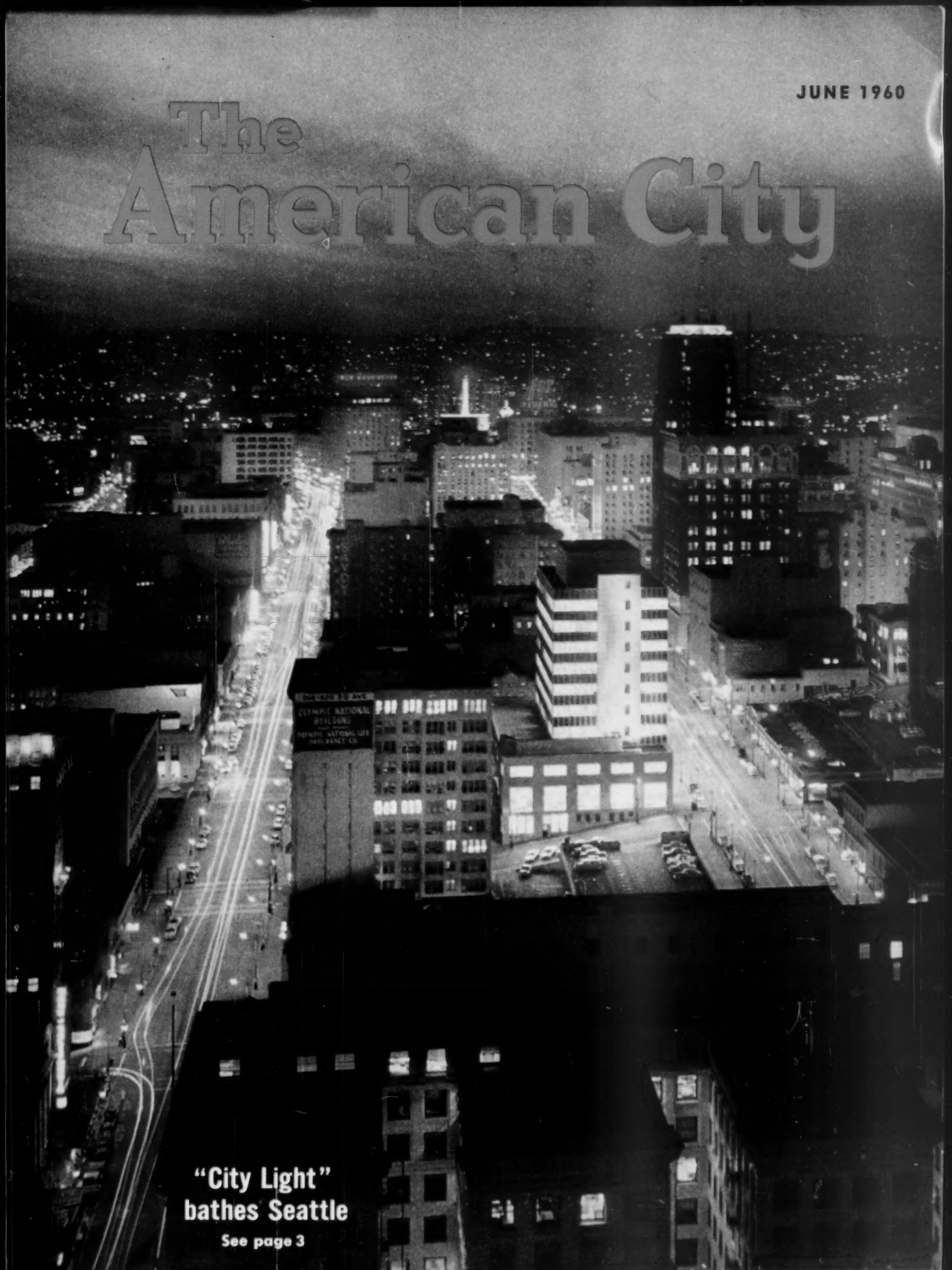
JUNE 1960

The American City



"City Light" bathes Seattle

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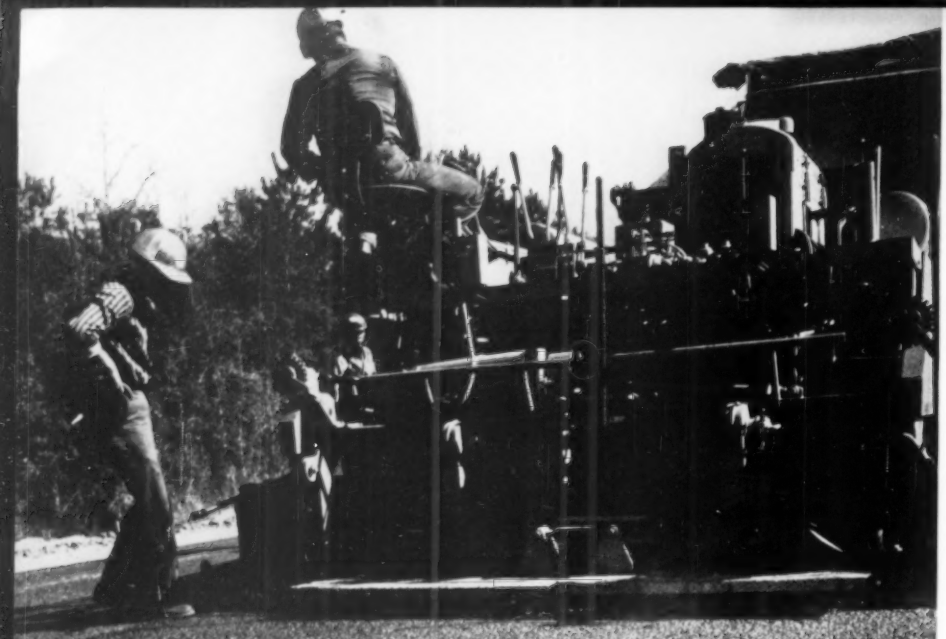

ASPHALT cuts paving time and costs

Particularly important to cities is the speed with which modern, heavy-duty Texaco Asphalt paving is laid, rolled and ready for traffic. No time-consuming curing period is necessary. Motorists, as well as home owners and business establishments along the street, are subjected to a minimum of delay and inconvenience.

A resilient, durable Texaco Asphalt pavement also costs less than rigid paving of comparable design. As a result, the city which paves with Asphalt is able to improve a larger yardage of its streets with available funds.

Helpful Booklets for the City Official

Two illustrated Texaco brochures describe methods and materials recommended for all types of Asphalt paving for streets, airports and parking areas. Interested municipal officials may obtain copies of these publications without obligation by writing to our nearest office.

TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16, Chicago 4, Denver 1, Houston 1, Jacksonville 1, Minneapolis 3, Philadelphia 2, Richmond 25.

TEXACO REG. T. M.

TEXACO ASPHALT

The American City
A Buttenheim Publication

JUNE 1960

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

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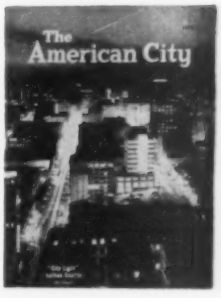
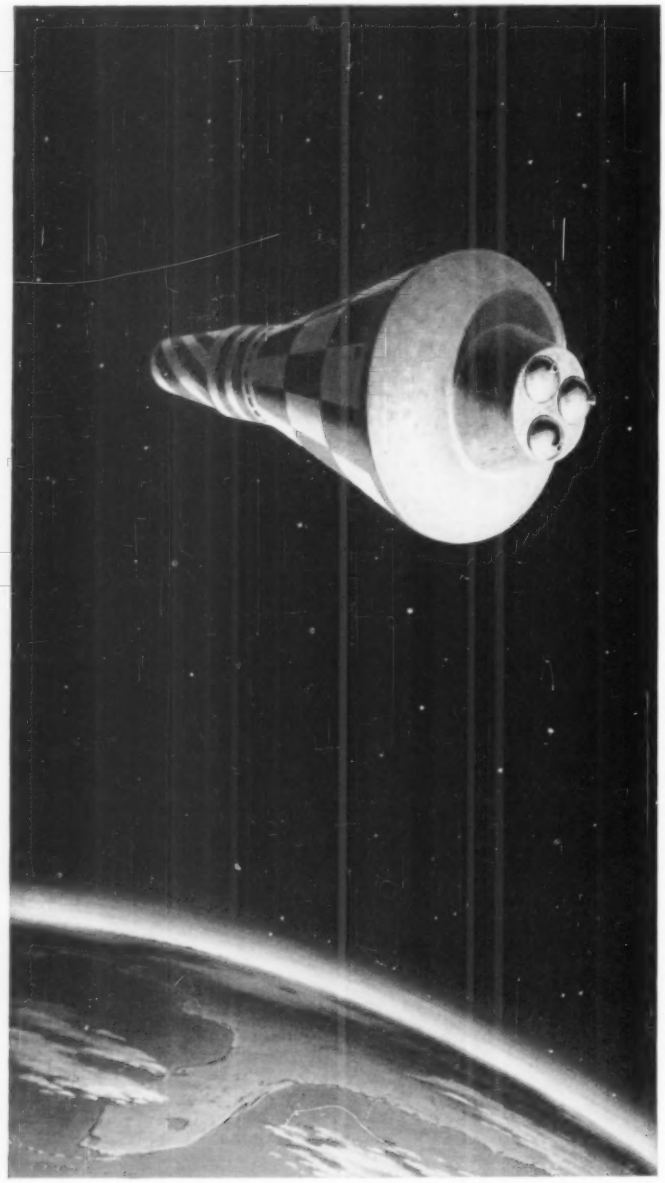


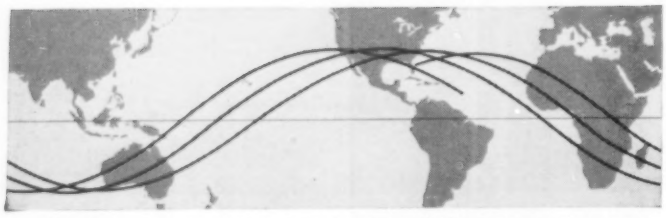
Cover Picture

The City of Seattle's Department of Lighting, or "City Light," with its annual revenue of over 30 millions is the big brother of Seattle's city departments. The first-hand story of its complete machine accounting system is told on page 145 by Orie L. Beaughan.

BELL TELEPHONE SYSTEM



An artist's conception of the astronaut's capsule in orbit



Black lines represent expected orbits of the astronaut's capsule. Project Mercury ground stations will be close to the orbital path

is helping to create the world-wide communications and tracking network for America's first man into space

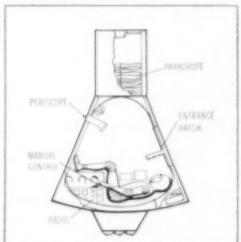
Another epoch-making space communications assignment was recently given to the Bell System.

Because of our experience in this field, we have been asked to set up a communication, telemetry and tracking network which will girdle the globe and maintain contact for Project Mercury—America's effort to put a man into orbit.

Western Electric, the Bell System's manufacturing and supply unit, heads an industrial team which will design and build this network for the National Aeronautics and Space Administration.

In all, 18 stations around the world are being constructed for the network, using existing radar and communication facilities where possible. The network's mission: to track and monitor the flight of the space capsule, transmit signals to its operating instruments, and provide a dependable voice channel between the astronaut and his colleagues on earth.

Creating communications systems for the space era which are as reliable as man can make them is familiar work for the Bell System. It's a natural development of the telephone system which serves you so well today, and will serve you still better in the future.



Project Mercury space capsule

BELL TELEPHONE SYSTEM

Volume 75 Number 6

The American City

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THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature.

ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS	OVERVIEW	
Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

Municipal Helicopters

Just received and read with interest several informative articles in the April issue of THE AMERICAN CITY.

Although our small city of 6,500 will probably never have need of a helicopter for traffic control, the article starting on page 121 intrigued me because of the make of helicopter. The Hiller Helicopter Corp., because of excellent weather conditions and the proximity to their main plant in Palo Alto, Calif., tests most of their craft in Hollister, using our municipal airport for a base of operations.

L. S. BRADY
City Manager
Hollister, Calif.

Rapid Transit

The article "Public Transit on Freeways" (May 1960, p. 106) has real significance for our Kansas City community due to the present status of the freeway construction program and the growth and increasing density of our urban area.

ROBERT M. TINSTMAN, *Manager*
Downtown Committee
Chamber of Commerce
Kansas City, Missouri

Odd City Planning

Another "Odd Thing About City Planning—" (Editorial, THE AMERICAN CITY, April 1960, p. 5) is our failure to recognize that a decision to have *no plan* for the city or major improvements in it *is also a plan*. It is a plan not to do anything; a plan for civic failure.

Still another "odd thing about city planning," to copy the heading on your editorial, is the lack of active direction from a director qualified by education, training and experience to comprehend the social, economic, cultural, political, financial and other questions involved in planning a city; and the inability of policy makers in keeping such a plan current for the good of those who are making or are destined to make it their home.

After having tried both, we found that a formal plan, and a director, mean that we are rising to civic success, not sinking to civic failure.

And civic success is vitally important today when the American system guaranteeing the rights of a free people is, in effect, on trial in the eyes of the world, facing the charge that it can neither compete with nor survive competition with totalitarian powers that do not recognize the rights and liberties of a free people.

HENRY H. BOLZ
Executive Secretary
Association of Commerce
Decatur, Ill.

Small Town Planning

An otherwise excellent article in your May issue, "Small Towns *Can* Afford Planning" (p. 120), produces an unfortunate impression due to its title and its subheading, which speaks of the "prohibitive cost" of developing a comprehensive master plan.

For the community referred to in the article, Keosauqua, Ia., population 1,101, a full planning job would certainly not cost over $10,000 and would probably be less. The federal government would pay half this cost under the Section 701 urban planning assistance program. Compared with the cost of, say, a wrongly placed sewer line, the local cost is hardly "prohibitive."

The article refers to an engineering reconnaissance and schedule of capital improvements as the "next best thing" to a master plan. While the Keosauqua study undoubtedly was competently done, serious questions may be raised as to how such items as utility and street systems can be properly planned without the comprehensive land use and traffic analysis which would form part of a Master Plan.

The point here is, as the author of the article in effect acknowledges, that a capital improvements program should be the *last*, not the *first*, step in the community planning.

DEAN K. BOORMAN
Community Planner
Ebasco Services Incorporated
New York, N. Y.

Incinerator Design

We have just read with a great deal of interest your article titled "When to Build an Incinerator" (March 1960, p. 118).

As consulting engineers for a large number of smaller municipalities in eastern Pennsylvania, we have for many years been advocating the alleviation of the municipal refuse disposal problem

(Continued on page 18)

see what the

MASSEY-FERGUSON 1001 TRACTOR SHOVEL

"CAN DO"

to save you manpower... machinery... money!

WIDE RANGE OF QUICK-CHANGE ATTACHMENTS

This Ram Pick-up Street Sweeper is just one of the many money-saving attachments for the M-F 1001. Others include the Ram Blacktop Spreader, Rotary Snow Plow, Ram Leaf Loader, angle dozer, rotary backhoe, swinging crane, lift fork, and scarifier.

Everyone is asking for a reduction in costs and an increase in efficiency. The Massey-Ferguson 1001's performance gives the answer, "Have Done. CAN DO!"

This high-quality, 60.3-h. p., 1-cu. yd. (SAE rated) tractor shovel is a time- and money-saver for every community — large or small. It has the versatility — with many quick-change attachments — to do virtually hundreds of different jobs. It lets you keep its operator busy, and it saves you the investment in other, more limited equipment. The Massey-Ferguson has the performance you need, too. It is equipped with Instant Reverse and Torque Converter — so you waste no time in backing up during loading or clean-up operations. It gets full payloads fast. Telescopic reach lets it dump over high trucks. See this "fleet-in-one" machine at your Massey-Ferguson Industrial dealer's now.

Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West St., Wichita 13, Kansas

Producing Sizeable Power for the "Sensational 60's"

MF60-21

EDITORIAL

The Trouble with "or equal"

. . . and the low-bid factor in municipal purchasing

The difficulty with the innocent little "or equal" phrase in most municipal and virtually all consulting engineers' specifications is obvious. In general, almost nothing is equal.

This is a basic stumbling block that trips many otherwise well-run cities. The "or equal" phrase has the creditable task of encouraging a number of suppliers to offer proposals for a specific part of a municipal improvement.

It has the discreditable fault of enticing conscientious officials to make the selection on the basis of price alone, and of lulling them into the false belief that all proposals are in fact equal in quality, which they are not.

Actually, local governments are required *not to take* simply the low bid. Price is only one factor, and far less important than excellent performance.

In general, the law requires a city to accept the bid which is *in the best interests* of the city. Any city official knows that there is much more to the purchase of equipment than simply the first cost of that equipment.

When a city purchases equipment or material, it is purchasing service. It expects this equipment to last a long time, and oftentimes to perform a multitude of tasks in an efficient manner. Costly maintenance and operation can make a few dollars saved on first cost look ridiculous.

We expect almost any municipal water works, sewage works, incinerator, pumping station, to operate efficiently for at least 25 years. We expect water and sewer mains to last for at least twice as long.

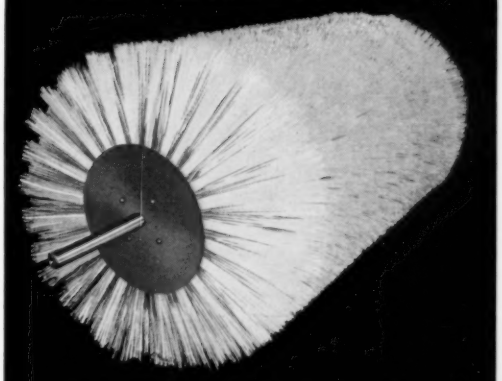
Municipal automobiles roll up surprisingly large mileage in a hurry, under the most difficult of stop-and-go driving conditions. Many trucks have power-takeoff features that mean that the engines work overtime doing other tasks than providing truck motive power. Tractors have a fascinatingly large number of attachments that permit them to work on a variety of jobs. Street sweepers pick up cover aggregate in street sealing programs. Other street

(Continued on page 14)

RADAX®

A TRULY NEW CONCEPT IN PREFABRICATED Street Sweeper Brooms

NO CORES TO BUY!



filled with long wearing water repellant SR Plastic Filament or Tynex Nylon.

PRICES — delivered to your shop

SWEEPER MAKE and MODEL	SR FILAMENT	TYNEX NYLON
MOBILE 54" BROOM	$195.85	$293.15
MOBILE 58" BROOM	$208.30	$310.60
WAYNE 450, 460 and 550	$169.75	$252.50
ELGIN STREET KING	$258.20	$388.10
ELGIN WHITE WING	$258.20	$388.10

STEP UP to long-wearing, PREFABRICATED Plastic Brooms without making a capital investment. Get the lowest broom cost per mile you have ever experienced — with a NEW BROOM that really sweeps clean.

- NO CORES TO BUY
- NO CHANGES IN PRESENT EQUIPMENT
- TRUE BALANCE AND UNIFORMITY THROUGHOUT

RADAX units are made on high-speed fully automatic machines. The cost factor is held down to an absolute minimum.

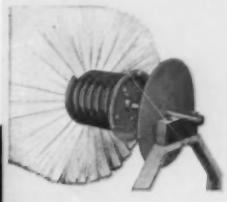
ONE — TWO — THREE and GO

1. Remove your stretchy broom cable.
2. Screw on the RADAX unit.
   (Visualize the RADAX Broom Coil as a big nut and your broom core as a threaded bolt. The RADAX unit screws on like putting a nut on a bolt.)
3. Anchor coil ends (we furnish anchor fixtures) and you are ready to go!

The RADAX Unit is disposable when worn out. Nothing to return for refilling.

RYNAL CORPORATION
DEPT. D 114 ST. JOSEPH ST.
ARCADIA, CALIFORNIA • HI 6-3600

Filaments are grouped into tufts — bound in steel channel and formed into the unique continuous one-piece RADAX Coil.



Screw the RADAX Broom Coil onto the old core — anchor — it's ready to go!

A *NEW* Refuse Body

THE TRUXMORE PAKKER

FULLY HYDRAULIC-AUTOMATIC UNLOADING

Truxmore crushes and retains compaction, resulting in more compaction and more payload.

Packer blade clears body when dumping, curved door helps raise rubbish to top of body.

Did you know that a new refuse body is on the market? Would your city consider buying a refuse body that's so light in weight that a heavy truck chassis is not necessary? Then you'll want to know more about the Truxmore Pakker!

You have the option of selecting either 18-yard or 23-yard capacity, with approximate body weights of 6,600 pounds and 7,100 pounds. The loading height does not exceed 15 inches above the truck frame. Write for our descriptive folder, and you can study the specifications in detail.

You'll want to know more about Truck Equipment Corporation too. We've been in business for eight years, selling nothing but new and used refuse trucks. Three years of development and testing resulted in the Truxmore Pakker. Please write us for a list of our satisfied customers. Better yet, will you let us demonstrate in your city?

Truck Equipment Corporation

MIDLOTHIAN TURNPIKE, RICHMOND 25, VIRGINIA

Phone BR 2-1418

A pressure distributor applies the neoprene asphalt and a chip spreader covers it with ⅜-inch aggregate and . . .

. . . a steel-tired roller then tacks the aggregate down to complete the operation.

Neoprene-Asphalt Test Suggests Urban Uses

Favorable results with neoprene-modified asphalt for maintenance of shoulders on the New Jersey Turnpike offers encouraging application to municipal streets. Harold W. Goldberger, the Authority's Engineer of Maintenance, has completed two installations totaling 13 miles on both sides of heavy-traffic sections of the Turnpike.

The results have shown that the neoprene-asphalt combination improves workability, retains chips better, provides lasting elasticity to the surface, reduces bleed-through, improves traction, and gives better performance at high and low temperatures.

Cutback asphalt, RC-2 or RC-3, modified with 1½% of neoprene by weight and heated to 150°F minimum or 200° maximum is applied by a standard pressure distributor at an average rate of 0.3 of a gallon per square yard for seal coating an existing three-inch course of penetration macadam on the shoulders. The stone cover is ⅜-inch aggregate applied at a rate of 25 pounds per square yard by tailgate spreaders or other mechanical means. The cover is rolled with an eight-ton Buffalo-Springfield tandem roller.

E. I. duPont de Nemours & Company, Wilmington, Del., is the supplier of the neoprene but does not provide neoprene-modified asphalt. Currently it is being supplied by six companies: Century Chemical Company, 150 Doremus Avenue, Newark, N. J.; Husky Hi-Power, Inc., P. O. Box 230, Cody, Wyo.; Trumbull Asphalt Company, 59th and Archer Road, Summit, Ill., (18 plants nationwide); West Bank Oil Terminal, Inc., P. O. Box 268, Paulsboro, N. J.; and Western Oil and Fuel Co., 277 Colfax Ave. N., Minneapolis 5, Minn. ◄◄

Adhesive Mixture Fills Pavement Dip

Time was the all-important factor in repairing a dip in the roadway of the Richmond-San Rafael Bridge in California. The dip, up to ¾ of an inch deep and ten feet wide, stretched 36 feet across several lanes. As it threatened to enlarge, the California Division of Highways began repairs at once.

Conventional repair techniques would have meant impeding traffic flow for too long a period. Even the use of an adhesive plus a new concrete overlay would have taken longer than desired under present traffic demands. Since the dip required only a ¾ inch overlay, the engineers decided to employ a polysulphide modified epoxy mortar—a mixture of the adhesive and aggregate.

The work consisted of sandblasting to clean off loose particles and oil film, mixing the ingredients, placing the patch and heating to expedite curing.

The adhesive composition, developed by the Division of Highways, consisted of liquid epoxy resin, liquid polysulphide polymer and curing agent. To this mixture enough white filler was added to give the finished mortar a concrete-like appearance to match the rest of the roadway.

Then the adhesive was poured in a mortar box and combined with aggregate in a one to fifteen ratio.

Workmen applied the mortar by shoveling the material onto the surface and smoothing it with a screed. Since little solvent was used in the compound, shrinkage was not a problem. Sand was sprinkled over the patch and a wood float used to smooth the material.

To reduce curing time (requiring about 12 hours at 80°F) heat was applied for about half an hour using propane burners while the lanes closed overnight. By morning all was in readiness for the daily rush of traffic. ◄◄

CATERPILLAR ANNOUNCES 2 NEW

NEW 150 HP 977H WITH 2½ CU. YD. BUCKET

Travel speeds: Forward—Low: 2.0 MPH 1st; 3.6 MPH 2nd. High: 2.5 MPH 1st; 4.7 MPH 2nd. Reverse speeds 25% faster than forward.

NEW 100 HP 955H WITH 1¾ CU. YD. BUCKET

Travel speeds: Forward—Low: 2.1 MPH 1st; 3.9 MPH 2nd. High: 2.7 MPH 1st; 4.9 MPH 2nd. Reverse speeds 25% faster than forward.

TRAXCAVATORS

with Power Shift Transmission and Live Action Hydraulics

977 SERIES H
955 SERIES H

all new for new high production

There is a way to beat higher costs—and that's with increased production. For tractor-loader jobs, here's your answer in the new Series H Cat 977 and 955 Traxcavators. Designed to set a production pace far faster than the models they replace (and other makes of comparable size), they're milestones in tractor-loader progress. With power shift transmission and Live Action Hydraulics, they're the loaders *that never stop.*

There may be machines in your line-up that are no longer earning their keep in light of today's more efficient machines. A comparison of your existing tractor-loaders with the new Series H Traxcavators could easily prove these new machines would increase your output at far lower cost than you imagine. Get the facts about them from your Caterpillar Dealer. Ask for a demonstration, too. See how they set a new production pace on the toughest kind of job.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U. S. A.

CATERPILLAR

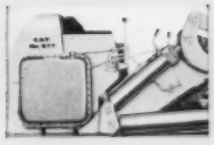
Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

TRAXCAVATORS ARE MAKING OTHER LOADERS OBSOLETE

NEW HIGH PRODUCTION FEATURES SPEED LOADING, LIFTING, HAULING, DUMPING . . . THE FULL CYCLE

NEW POWER SHIFT TRANSMISSION

One lever—that's right, one lever gives split-second changes in speed or direction to slash cycle times and increase operator efficiency.



NEW LIVE ACTION HYDRAULICS

Another Caterpillar development! Live Action Hydraulics provide faster lifting speed and greater lifting capacity without robbing power from the tracks. The 977H Traxcavator packs 41% more hydraulic lifting power—the 955H, 23% more than former models.

MORE HORSEPOWER WITH NEW CAT TURBOCHARGED ENGINES

Up 50% on the 977H—its new Cat D333 Engine develops 150 HP at the flywheel. Up 43% on the 955H with a new Cat D330 Engine that develops 100 flywheel HP.

NEW INCREASED BUCKET CAPACITY

An 11% increase on the new 977H with new 2½ cu. yd. bucket—and a 16.6% increase on the 955H with new 1¾ cu. yd. bucket. Complete redesign of engine, power train and chassis provides new machine balance to handle the heavier loads.

NEW HEAVY-DUTY UNDERCARRIAGE

Many new features, including larger, stronger track components that also increase stability . . . lifetime lubricated rollers with patented floating ring seals need no servicing . . . and track guiding guards welded to the roller frame for positive track alignment. The 955 Series H Traxcavator also features a new 6-roller track frame and hydraulic track adjusters, both standard equipment.

MORE HIGH PRODUCTION FEATURES

A new, two-cylinder gasoline starting engine for positive starts in any weather . . . and a new dry-type air cleaner that removes at least 99.8% of all dirt from intake air in the worst dust conditions, cuts maintenance time as much as 75%. Retained features include 40° bucket tilt back . . . automatic bucket positioners and kick out . . . 3-grouser track shoes.

QUICK-CHANGE ATTACHMENTS

Bar none, Traxcavators are the most versatile machines you can use. With attachments, you can always keep them working—and working profitably. Attachments available for the new 977 and 955 include the Side Dump Bucket, Rock Bucket, Quarry Bucket, Bulldozer, Ripper and Log and Lumber Forks.

(Advertisement)

New Container System Saves Dothan, Alabama Over $50,000 Annually

Dothan City Manager R. Powell Black led move to streamline collection system.

By John McCoy
Advertising Manager
Dempster Brothers, Inc.

Dothan, Alabama has accomplished 100% containerization of its commercial refuse, and is enjoying savings of over $1000 each week.

In addition to the savings, the entire commercial district has a "new look." Scattered piles of refuse, unsightly bins, and knocked-over cans that formerly drew flies and rats constituted a dangerous fire hazard. Today, these trash piles are out of sight, enclosed in big-capacity, all-steel refuse storage containers.

The secret behind the savings lies in mechanized handling of containers in connection with a high-pressure packer body.

Changeover to the new system, one of the largest mass conversions to containerization ever attempted, came after more than a year's study and an exhaustive cost survey. R. Powell Black, aggressive young city manager, was leader of the movement to streamline the municipal refuse collection system.

Survey Conducted

The refuse survey, conducted under the direction of Mr. Black and Sanitation Superintendent G. J. Parrish, revealed the following facts:

1) Direct labor costs (not including equipment operating expenses) ran some sixty-five cents per cubic yard for the 1800 yards of refuse being generated weekly in the commercial district.
2) In addition to the fire hazard, scattered trash and double handling of material in bins were consuming a lot of the collection crews' time.
3) Fast turnover of collection personnel was contributing to inefficiency due to the inexperience of replacements.
4) Civic leaders and the Houston County Health Department were dissatisfied with sanitation conditions.

From inspection trips to other cities, past experience, and considerable research on the city's specific problems, City Manager Black was convinced that a mechanized container system would be necessary to overcome Dothan's refuse collection ills.

Mechanized System Chosen

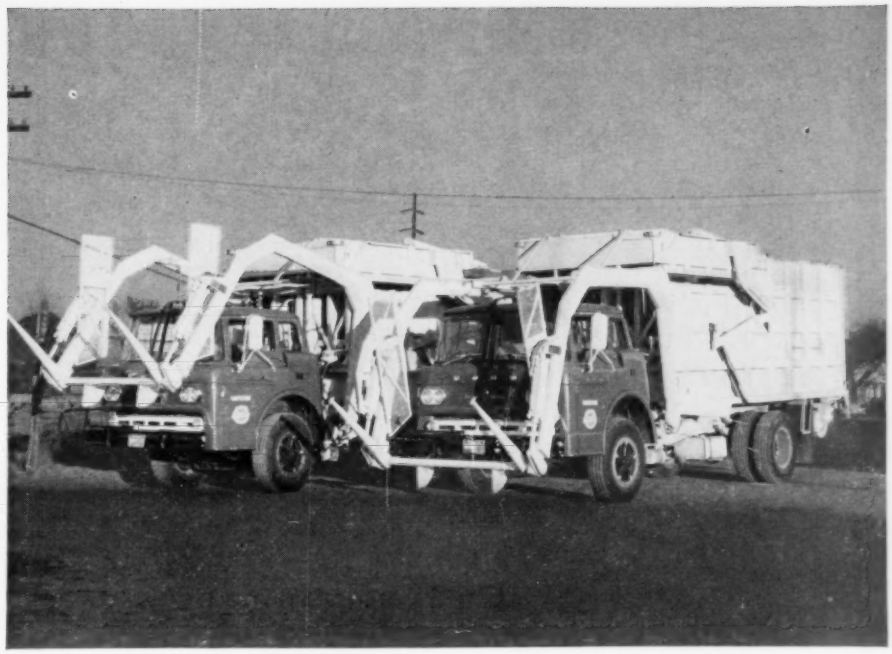
In meetings with Sanitation Department and other civic officials, various types of equipment were compared, and the decision was made to recommend the DEMPSTER-DUMPMASTER System.

This system consists of a self-loading packer and detachable steel containers. As the containers are filled, the Dump-

Before: Scene at garment factory shows why pick-up crews were delayed.

After: An eight-cubic-yard container encloses unsightly refuse and is emptied in less than 60 seconds.

Dumpmaster approaches eight-cubic-yard container behind store, and engages pick-up arms.



Two CA30-24DB Dumpmasters serve Dothan's commercial district.

master makes its rounds, automatically picking up each container and emptying the contents into its enclosed packer body. Here, the material is compressed to a fraction of its former volume by action of a hydraulically-powered packer plate, enabling the Dumpmaster to haul the equivalent of many truckloads of material on each trip to the disposal area.

Two Dumpmasters and 220 containers were placed in service six months ago with the approval of the City Commission, and preliminary results indicate that savings will surpass the survey's estimate. Labor costs alone, not including truck operational costs, dropped from sixty-five to seven cents per cubic yard, an almost unheard-of figure in municipal commercial collection. With four trucks removed from service, further operational savings are being effected.

Mayor Earle C. Moody and Commissioners Davis and Thrower are pleased with the attitude of the public and Sanitation Department employees.

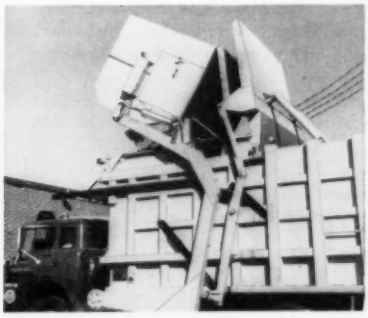
Free Survey Offered

A survey similar to the one made in Dothan can be made by a Dempster engineer in your city without cost or obligation. Write on your letterhead, giving your title. A free 24-page brochure on the Dumpmaster is available on request.

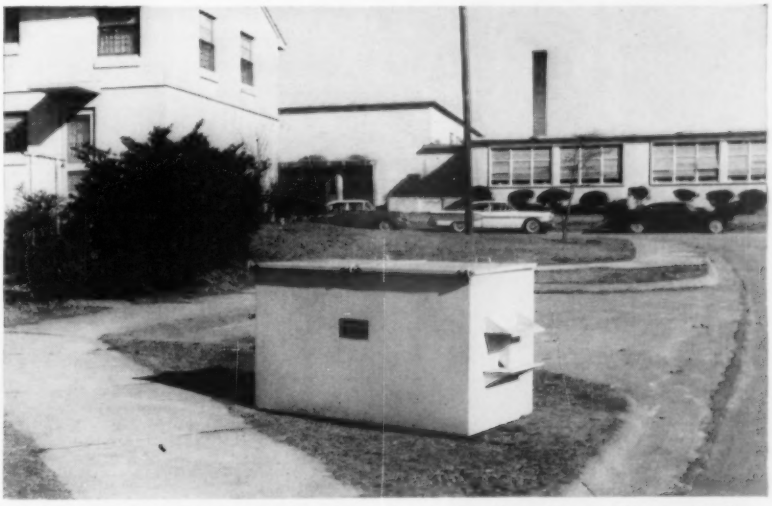
DEMPSTER BROTHERS INC.

Dept. AC-6 Knoxville 17, Tenn.

Huge load of refuse is emptied at disposal area.



Container is lifted and emptied into hopper without driver leaving cab.



A few three-cubic-yard containers strategically placed, serve hundreds of families in this housing area.

STOP....

...and think before you use paint again

TRAFFICAIDE® MARKERS

are safer because they show brighter—last longer

Motorists and pedestrians rely on your traffic markers for their very lives. Don't let them down. Use only those markers that can stay fresh and alive —that can outlast weather and wear. TRAFFICAIDE specialized pavement markers meet these vital requirements. Fourway reflective, they flash their warning message around the clock, rain or shine, dark or light.

And TRAFFICAIDE markers suffer little from the elements or the passage of time. Made of a specially compounded vinyl, they are tapered and precoated for lifetime bonding to any pavement. In fact, road tests using both paint and TRAFFICAIDE markings reveal that TRAFFICAIDE outlives paint by more than ten to one.

easy on your budget, too!

Only TRAFFICAIDE's quick-setting mastic is needed for secure bonding to any pavement. Markers dry into place immediately. Traffic flows freely, releasing traffic control personnel for productive work. But the greatest saving of all is the extremely low maintenance cost that keeps your traffic marking system at peak efficiency throughout the years ahead.

TRAFFICAIDE markings include directional arrows; crosswalks; square—rectangular and diamond shapes; lane —berm and no passing lines; parking or car limits; letters, words and numerals.

TRAFFICAIDE CORPORATION
AUBURN, N. Y.

MAIL THIS COUPON TODAY!

Clip this to your letterhead: 2

Gentlemen:

Please send me without obligation your new folder on TRAFFICAIDE Long Life Specialized Pavement Markers with general specifications.

(Continued from page 7)

sweepers double as snow plows. Front-end loaders do everything from plowing snow to changing street lights.

For duties like these, when long life and efficient operation are paramount, our local governments *must* buy quality if they are to serve the best interests of their people. This means that they must be knowledgeable buyers in order to recognize quality when offered.

It also means that consulting engineers who are retained by these local governments should give them advice that truly tells them how to obtain quality at a favorably low price. Conscientious engineers do this. Engineers who are indifferent to the best interests of the client will permit sélection of cheap equipment to keep the overall first cost of the improvement within their estimates. Stupid ones merely copy the specification from the most convenient sales catalog without any real regard to its actual suitability, or will even ask a manufacturer to prepare the plans for them and then offer them as their own. Beware of such engineers. They are a costly blight to their clients and an insult to a reputable profession.

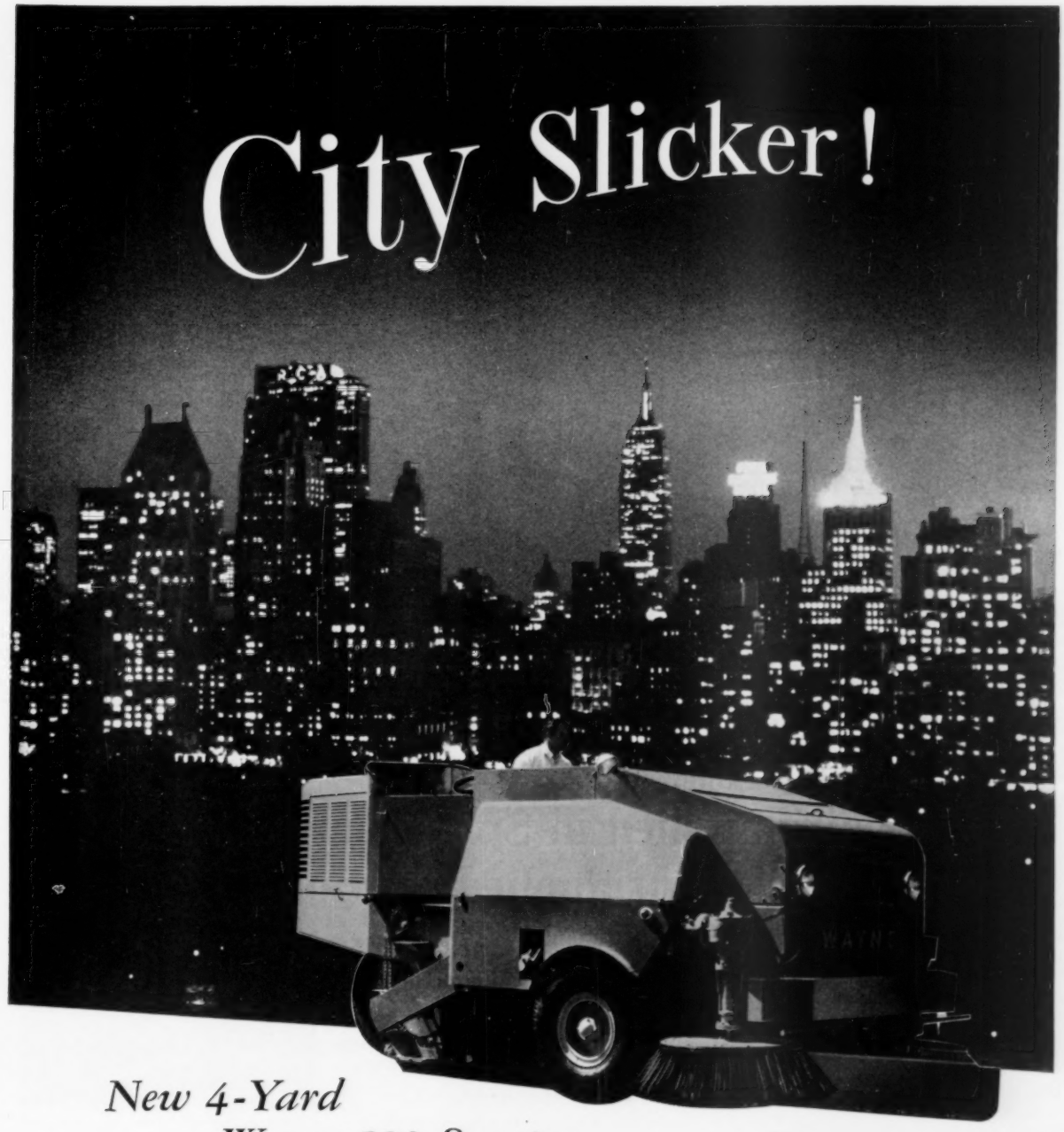
This also means that suppliers, who like to sell to local governments, should point out the features of their equipment or material that make it actually a superior, quality product. When you hear a sales engineer raise the cry of "politics," all too often you only are hearing an ineffective salesman try to excuse his own lack of ability.

A city has the obligation to accept the lowest *responsible* bid. This means that the concern presenting the proposal must have:

- **the capacity and skill to perform the contract, or provide the equipment or material of high quality to serve under the conditions outlined.**
- **financial resources that would make it a reputable firm engaged in this type of activity.**
- **a proved background of performance that would demonstrate that it can provide the quality needed.**
- **an ability and desire to provide future maintenance and service.**
- **and *finally* a favorable price.**

A product of quality and established merit protects your city and insures that tax dollars invested earn the most for your people. And such quality products are not often "equal."

City Slicker!



New 4-Yard Wayne 520 Sweeper

To slick up your streets at a saving—regardless of your city's size—here are *all* the advantages of big sweeper performance in a single machine... the new Wayne 520 Sweeper! You get the extra capacity of a 4 cubic yard machine, the extra hours of on-the-job sweeping, and the extra economies of a one-man street cleaning department with this big new Wayne!

There is nothing to match it on the market today. The 520 has the rugged power and stamina for the toughest sweeping schedules... 3-wheel maneuverability... full 4 cubic yard hopper capacity... and over-all construction features that make a Wayne the most dependable sweeper you can buy.

The new Wayne 520 couples maximum *capacity* to maximum *economy*, puts big sweeper clean-ability within reach of every city. Before *you* invest—*check* the facts with Wayne. *Write for literature—today!*

WAYNE

WAYNE Manufacturing Co.
2437 East Lexington Street
Pomona, California

Send me a copy of your Sweeper brochure

Name_____

_____

Attach to letterhead and mail

WAYNE MANUFACTURING CO.

POMONA • CHICAGO • NEWARK Export: Henry R. Jahn & Sons, Inc., New York City

Despite acid fumes and Ohio winter...

M50® paint applied in Spring matches color of *M50* paint applied previous Fall

One of the many outstanding properties observed during National Lead exposure tests of *M50*® basic lead silico chromate pigment paints was a remarkable resistance to fading. The practical value of this property is brought out by an event in the repainting of The Harvard-Dennison Bridge in Cleveland, Ohio.

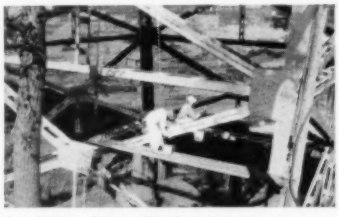
At the close of the 1958 painting season, this repainting had been only partly completed. In Cleveland, that Winter was particularly hard on paint . . . periods of heavy precipitation and cold alternating with warm, sunny days. And . . . notice the smoke in the picture above... this particular bridge lies in the direct path of acid fumes from the stacks of a nearby chemical plant.

Despite all this, when the contractor began to paint again in the Spring, no color difference could be detected at the boundary between the previously applied *M50* paint film and the new.

What makes this color retention so remarkable is that it is obtained in a finish paint that also provides the rust inhibition of a standard primer. Only paints made with basic lead silico chromate pigment combine the anti-corrosion action of a primer with the weather resistance, durability and tintability of a finish paint.

Now, *for the first time* . . .

Paint suppliers are providing states, counties and municipalities with true "Defense-in-Depth" against corrosion . . . paint systems with an active rust inhibitor, basic lead silico chromate, in *all* coats, primer, intermediate and finish. If you are not yet acquainted with these modern paints, ask your regular suppliers about them. They're setting new standards for durable metal protection.



Applying *M50* alkyd primer coat over commercially sand-blasted surface.

Grey *M50* alkyd finish coat goes on with complete color uniformity.

M50® an **oncor** TRADEMARK *Pigment...A Development of*

National Lead Company

General Offices: 111 Broadway, New York 6, N.Y.

The 8,000 pints of water that this double tank can hold will keep 1,000 persons for over a week . . .

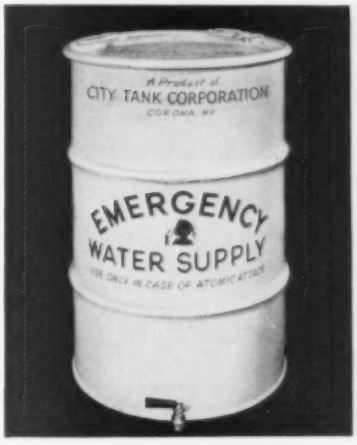
Have a Drink of Water at Least

Of course, the only 100% civil defense is no war but what are other CD devices? The widely provided air warning systems and the practically non-existent fallout shelters.

What else? City Tank Corp. points out that in the event of an attack there will be no water for drinking. To make some uncontaminated water available the company offers fire and police departments special atomic emergency water supply steel tanks in two sizes: 440 pints (stationary) and 8,000 pints (mobile). Inside surfaces are treated to keep water pure.

The stationary tank is 35 inches high by 24 inches in diameter and will provide 36 persons with a pint a day each for 12 days.

The trailer tank is 134½ inches long by 48 inches in diameter and will serve 1,000 persons with a pint a day for eight days. Prices are $77 for the smaller and $2,995 for the larger tank. They are sold directly by City Tank Corp., 53-09 97th Place, Corona 68, New York. ◄◄



. . . while this stationary tank will take care of 36 persons for nearly two weeks.

Do U. S. Police Want Sports Cars?

The Sunbeam Alpine shown here is a brand new sports car designed for the American market and distributed by Rootes Motors. It is also offered for police work.

The chief of police in Leeds, England, has just equipped a flying squad of officers with the new 100-miles-per-hour-plus Sunbeam Alpine sports car. It was introduced in the United States in November 1959. ◄◄

In England police catch speeders with sports cars.

YOU ASKED FOR IT!

the NEW DAVIS Self-Propelled T-66 TRENCHER

is built to your specifications

*Pat. Pending

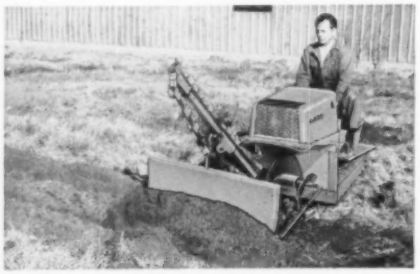
features **Positive Traction...Hydraulic Variable Speed Drive**
Convenient Control...Virtually Effortless Operation

Here's the finest, most advanced utility trencher available. The Davis T-66 has been designed and produced after an exhaustive survey determined the features users really wanted. Every one of its 1350 pounds is packed with performance to handle 9 out of 10 jobs with such efficiency and economy that you're bound to make more profit. And, it's priced far less than you would expect.

Positive traction, accurate speed control, and distribution of power where you need it is obtained through the use of tracks and a variable speed hydraulic drive. Boom is operated hydraulically for depth control, and it has a built-in pre-loaded shock absorber which cushions the shock but doesn't absorb the power. Everything is designed for the operator's comfort and convenience — requiring very little skill or effort. It digs 3" to 4" wide to 66" deep; or 12" wide, 30" deep and at varying widths and depths in between. Only **two tooth combinations** are required to let you **dig** at all widths. It trenches from 1-ft. to 12-ft. per minute depending upon soil conditions. It is compact, only 37" wide. The Davis T-66 is quality built in every part. It pays off in 33 ways!

ASK ABOUT ITS 90-DAY UNCONDITIONAL GUARANTEE

DOES ITS OWN BACKFILLING
The Davis T-66 has a low-cost, well designed, hydraulically controlled angle backfill blade. The T-66 has two-speed drive with instant forward and reverse, powered steering, independent left and right positive clutches and disc steering brakes for maneuverability in backfilling.



the DAVIS PUP TRENCHER digs by itself

Self-propelled by positive 6-speed winch drive. Digs 2" to 3" wide to 36" deep; 4" wide, 18" deep. Low cost.

the DAVIS HUSTLER UTILITY TRAILER

carries T-66 and numerous other items. 2000 lb. capacity, 48" x 84" deck. Has low center of gravity and load equalization.

DAVIS MFG. INC.
1517 South McLean Blvd., Wichita 13, Kansas

Tell me more about the Davis T-66____ Davis Pup____ Davis Hustler Utility Trailer____
Please send literature and name of distributor.

NAME_____

ADDRESS_____

TOWN_____ STATE_____

T6-60-3

(Continued from page 5)

by the erection of incinerators. Your paper is most timely and we should appreciate receiving 25 reprints for dissemination among our municipal clients.

ARTHUR L. WEISENBERGER
A. L. Weisenberger Associates
Allentown, Pa.

Who Planned Philadelphia?

Re your editorial ("The Odd Thing About City Planning," April 1960, p. 7), William Penn planned Philadelphia, not Ben Franklin.

ABE ROSEN
Deputy City Administrator
Philadelphia, Pa.

EDITOR'S NOTE: Of course!

New Chemicals For Weed Control

Expanded use of granular herbicides, pre- and post-emergence sprays, plastic mulches and perfection of machines that can lay down mulch materials quickly and efficiently made big news on the herbicide front in 1959. This was the report of M. W. Meadows, Grange League Federation, Ithaca, N. Y., at the recent Northeastern Weed Control Conference.

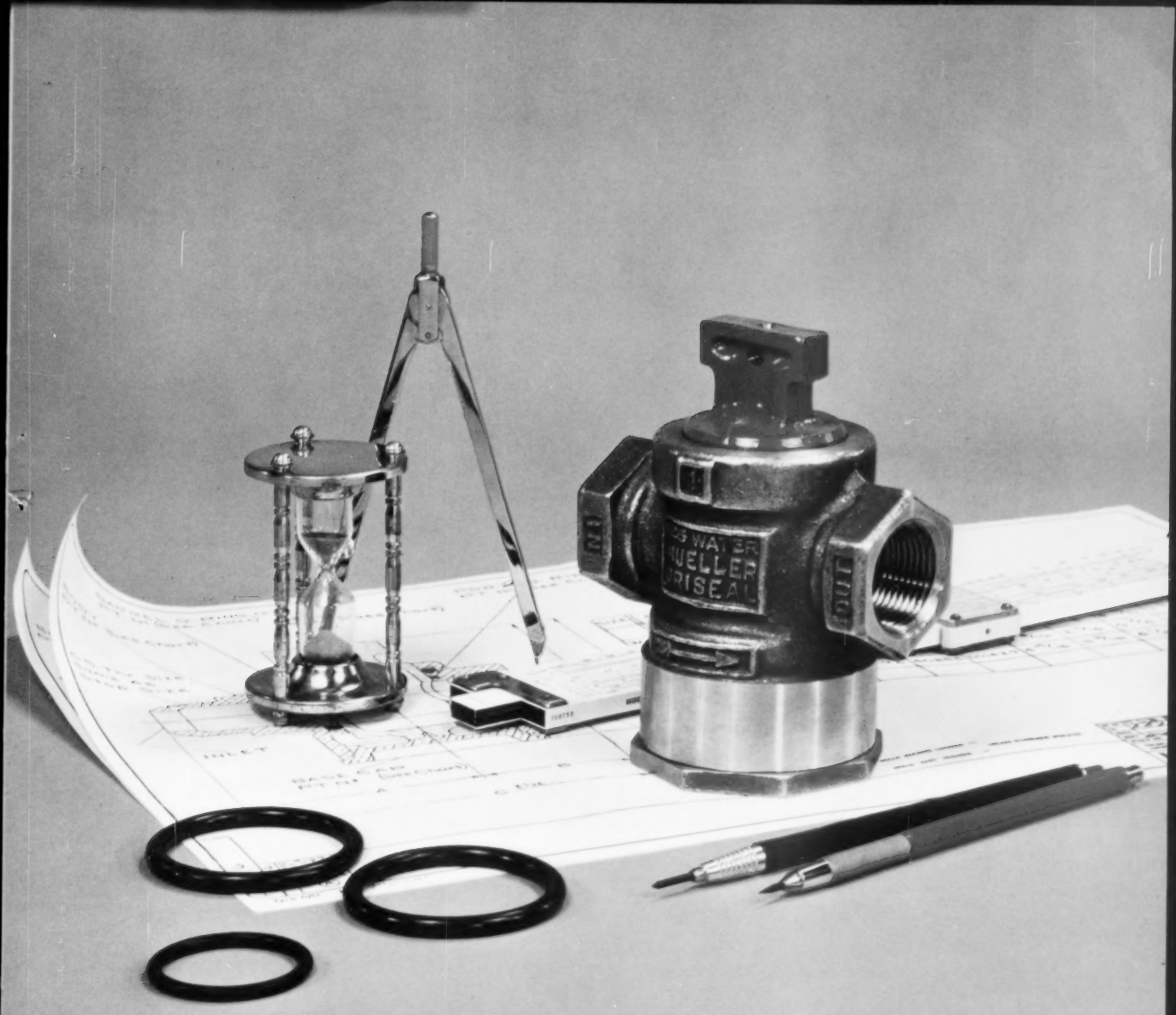
Chemicals such as 2-4-D, Silvex and Simazine are proving effective against many submerged rooted aquatics. Getting the chemical down to the bottom of a body of water before it disintegrates or releases the chemical has been accomplished by impregnating or absorbing the toxicant on a specially prepared granule that sinks to the bottom of the body of water.

A major problem with such granular herbicides as CIPC, Simazine and Dinitro is the perfection of equipment to properly apply them over a range of plants that vary widely in growth habitat.

Some attention is being given to machinery for planting or transplanting crops through the mulch material. Paper mulches that will not break down during the course of a year and plastic materials that will not disintegrate too quickly or present a problem of soil tillage if plastic is not removed before tillage in preparation to plant another crop, are being studied.

A possible additional value of mulch materials is the increased effectiveness obtained with some soil

(Continued on page 23)



MUELLER CO. introduces the

ORISEAL® VALVE

Now! a new valve . . . the ideal curb valve

SURPRISINGLY EASY TO OPERATE—EVEN AFTER PROLONGED IDLENESS!

POSITIVE LIFE-TIME PRESSURE SEALING!

EXTREMELY LONG CYCLE LIFE!

PERMANENTLY "LUBRICATED" WITHOUT GREASE!

the key to its performance is in the design . . .

MUELLER CO., DECATUR, ILL.

twelve years of intensive field testing have proved the big advantages in the ORISEAL design.

new simplified design—the key to Oriseal performance.

Entire valve assembly only six parts; three "O" rings *in the valve body,* the Teflon coated plug and the base cap.

field and laboratory tests—the key to Oriseal's proof of performance!

Long cycle life! Tests prove the extremely long operating life of the Oriseal. Valves of all sizes installed on water and air lines operated from 25,000 to 45,000 cycles without developing leaks or without an increase in the torque required to turn them.

Easy turning! Tests prove the 2" Oriseal Valve is easily operated under 125 p.s.i. with a 12 inch wrench. This has been proven in all test conditions — after long periods of remaining open or after repeated opening and closing.

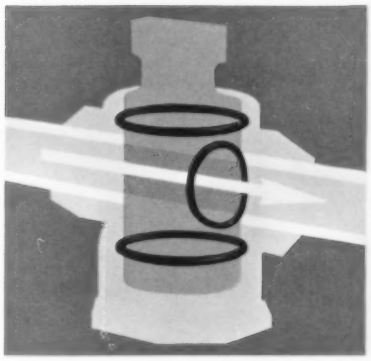
Positive sealing! The Oriseal has proven to be leak proof. ¾" Oriseal Curb Valves installed in 1948 have shown no leaks to date. All Oriseal Curb Valves removed from service lines and tested with air at 85 p.s.i. showed no leaks.

Permanently "lubricated"! Tests prove the straight Teflon coated plug actually loses none of its "lubricating" or friction resistant qualities through years of continued operation. Teflon impregnates the plug surface and "lubricates" effectively even after years of wear.

No operating maintenance! All Oriseal Valves tested required no periodic maintenance. Some Oriseal Curb Valves were cycle tested under pressure as much as 45,000 times without service attention of any kind.

If you would like the complete test reports on the Oriseal Valve, please write to Mueller Co., Decatur, Illinois.

Oriseal design features add new benefits to the "plug valve"



The Oriseal maintains the advantages of a plug type valve, yet is easy to operate, does not require lubrication or periodic maintenance and needs no mechanical means of seating.

The Oriseal is a sturdy quarter turn valve. The position of the tee head readily indicates whether the valve is open or closed. Even though the valve is hidden or otherwise inaccessible, the open or closed position is always easily determined.

There are no small parts to twist or break — no stem to bend — no threads to strip.

Check these Oriseal design features . . . they offer curb stop advantages not found in any other type valve.

FULL ROUND WAY—permits rodding and pipe cleaning operations.

STRAIGHT THROUGH FLOW—no obstructions—almost no pressure loss.

PROTECTED SEATS—in open position seating surfaces are covered and protected from the flow of the fluid.

TOP AND BOTTOM "O" RINGS—positive pressure sealing without mechanical means—tend to cushion the plug.

STRAIGHT, BALANCED PRESSURE PLUG—top and bottom "O" rings are of equal size eliminating end thrust —contributes to ease in turning.

PORT "O" RING—functions in a specially designed "O" ring groove located in the body around the outlet port. This design provides the maximum support for the "O" ring—eliminates major causes of "O" ring damage—results in the proper "O" ring seating action—gives positive pressure sealing and long cycle life.

TEFLON COATED PLUG—surface of the plug is coated and impregnated with Teflon, which is an inert material with a very slick surface. Teflon assures easy turning—eliminates "sticking" or "freezing" even after prolonged idleness.

STRONG CAST BRASS BODY—designed with extra strength and sturdy check lugs to withstand all normal operating and installation stresses. The ORISEAL body has withstood extreme laboratory stress and pipe bending tests, as well as field test conditions.

NO LUBRICATION OR PERIODIC MAINTENANCE—if necessary, the valve can be completely reconditioned in the line. Simply remove the base cap—slide out the plug—replace the "O" rings—and reassemble the plug and base cap.

MUELLER CO., DECATUR, ILLINOIS

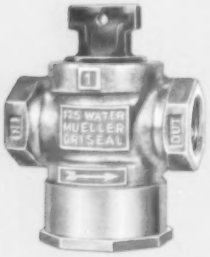
ORISEAL CURB VALVE *Specifications*

Full Round Way Opening — unobstructed passageway
Solid Tee Head — ¼" hole for attaching stationary rod
Quarter Turn with Check
Opening by turning to the left (counter-clockwise)
125 p.s.i. Water Working Pressure
125 p.s.i. Test Pressure — Every Oriseal Valve is fully tested in both the open and closed position with 125 p.s.i. air pressure under water. This is a much more exacting test than a hydrostatic test.

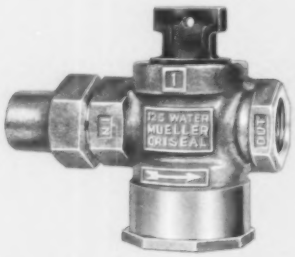
150° F. Maximum Water Temperature Rating
Sizes — ¾", 1", 1¼", 1½," 2"

Oriseal Valves comply with all applicable parts of the following specifications:

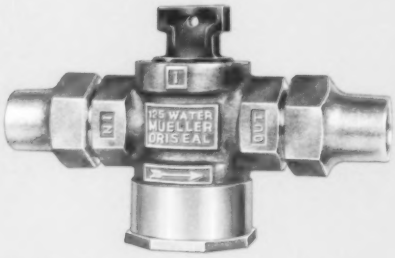
AWWA	C800-55
ASTM	B-62-52 (85-5-5-5)
ASA	B16.15-58
ASA	B2. 1 - 45



H-10291: Oriseal Curb Valve
Inlet: Inside I.P. Thread
Outlet: Inside I.P. Thread



H-15176: Oriseal Curb Valve
Inlet: Mueller Copper Service Pipe Connection
Outlet: Inside I.P. Thread



H-15201: Oriseal Curb Valve
Inlet: Mueller Copper Service Pipe Connection
Outlet: Mueller Copper Service Pipe Connection

Mueller Improved Curb Boxes with either stationary or separate shut-off rods are available: H-10385—¾", 1" valves; H-10386—1¼", 1½", 2" valves

a word about Teflon

Teflon is a chemically inert neutral substance with no toxicity or taste.

It has been approved for use in food processing and food handling. Teflon is one of the most chemically and corrosive resistant materials known.

If you have experienced curb stops "sticking" or if you are using gate valves in place of large size curb stops, test an Oriseal Curb Stop and be assured of its easy turning qualities. Write today or see your Mueller representative.

MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

Form No. 9010

Printed in U.S.A.

(Continued from page 18)

fumigants that can be applied to the soil in conjunction with the mulch-laying operation.

In instances where the complex of weeds is such that no one available material will prove adequate, combination of herbicides is working out satisfactorily. CIPC with Randox (six pounds active of each material) has proven effective on the muck soils of New York State. The addition of about three pounds of Dalapon to the Dinitro spray mixture has resulted in good annual weed and grass control on potatoes. Amino Triazol and Simazine (1 to 3 mixture) has given excellent long-lasting control of a wide variety of weeds. The combination gives an excellent burn down of existing foliage. Rates of about six to 12 pounds active per acre of the combined ingredients have given soil sterilization for six months to two years.

Pelleted or granular formulations of Fenuron and Urab can be spread by hand or machine—either broadcast or in a 3-by-3-foot grid system. This obviates the necessity for using a sprayer and hauling water.

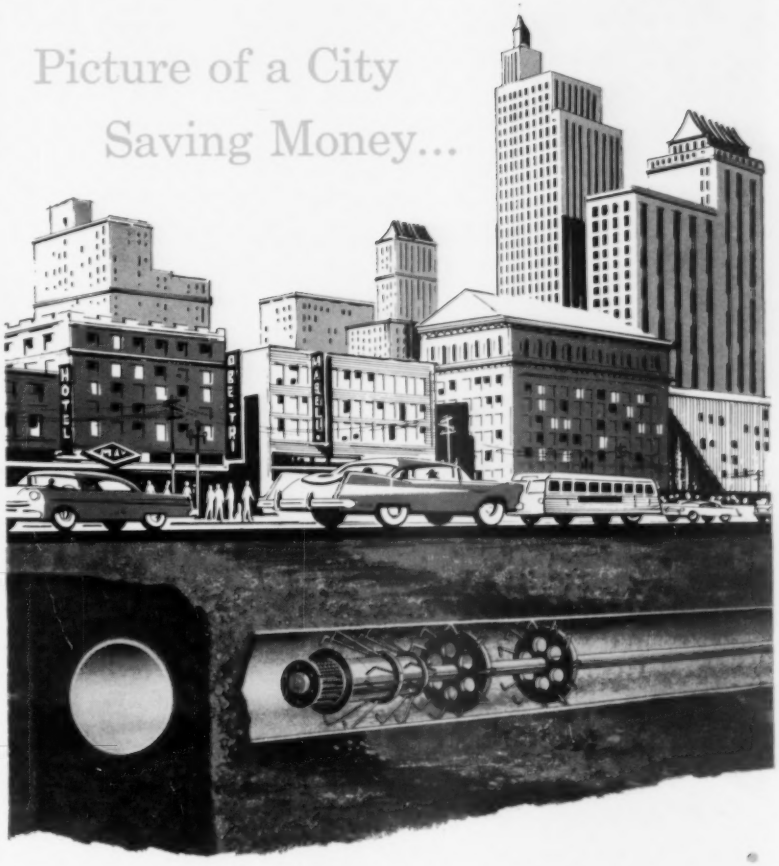
Atrazine at rates of one to two pounds active material per acre has given excellent control of annual weeds and annual grasses when applied pre- or early post-emergence to corn.

Amiben, a liquid spray applied at planting time at rates of three to four pounds active ingredients per acre, gives good annual weed and annual grass control in such crops as soybeans, peanuts and carrots.

Two post-emergence sprays new on the scene are Karsil (Niagara 4562) and Solan (Niagara 4512). Karsil has shown promise on such crops as celery, carrots, parsley, parsnips, strawberries and sweet potatoes at rates of around four pounds active material per acre. Solan has been effective against annual broadleaf weeds in tomatoes, carrots, celery and strawberries at the same rates.

Fenac has given good spring control of quackgrass four to six feet tall, plowed two weeks later and planted to corn. Effective rates range from two to four pounds of active chemical per acre.

Silvex is showing promise in controlling cinquefoil in Birdsfoot trefoil as a late fall application at ½ to one pound active; and about ½ pound active per acre controls dog fennel in wheat as a late fall, winter or early spring application. ◄



Spunline Relines Pipe Lines in-place without removing the pipe

Another city such as Spokane, Dallas, or Los Angeles will soon be enjoying the savings of another rehabilitated pipe line. The flow will increase, the pumping cost will drop and the pipe line will be good as new for at least another quarter of a century.

And traffic will move without interruption or inconvenience to the public.

Spunline® is applicable to pipe lines down to 4" and may be used in cast iron, steel, concrete and wrought iron pipe lines.

Write, wire or phone PIPE LININGS Inc.

Subsidiary of American Pipe and Construction Co.

2414 East 223rd Street, Wilmington, California
P.O. Box 457 • Phones: SPruce 5-3273 — TErminal 5-8201
Rail Address, Pacific Electric, Watson, California

Lock Joint Concrete Pipe's unexcelled record for durability, efficiency and maintenance-free service is no accident. It is the product of skilled design, meticulous choice of materials and painstaking workmanship.

Lock Joint's well-tested, conservative steel reinforcing design produces pipe of unusual strength and safety. Carefully analyzed select materials, expertly combined by experienced craftsmen, assure unusual durability and permanent high flow characteristics. The watertight, flexible Rubber & Steel Joint permits rapid, economical installation and immediate backfill.

So, when considering materials for water transmission and distribution mains or sewer or culvert lines, make certain to weigh the merits of the pipe that *made its way by the way it's made* — LOCK JOINT CONCRETE PIPE.

LOCK JOINT
CONCRETE PIPE

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

It took less than an hour to remove a 40-foot section of old pipe . . .

. . . and replace it with a new section.

Steel Pipe Examined After 24 Years of Use

Seldom does a city get the opportunity to pull a pipe out of service for the sole purpose of examining it. Danville, Ky., had that chance when, in the fall of 1958, Armco Drainage & Metal Products, Inc., made the rather unusual request to remove a 40-foot section of steel pipe in order to determine its durability. The section was part of a four-mile-long raw-water line from Lake Herrington to the city.

The writer designed and supervised construction of the line in 1934, specifying steel pipe because it was felt that a lined, coated and wrapped steel pipe would give the desired durability and trouble-free performance plus economy of installation. Armco supplied the pipe, and in its requests to check it, offered to bear the cost of removing the section and replacing it with a new one.

J. S. Watkins, engineer for the City of Danville, supervised removal of the pipe. All present examined the sections at once, using a mirror and flashlight to reflect light into the pipe for better visibility. We carefully examined the pipe coating and wrapping, the interior lining, the butt ends of the pipe, and the couplings, coupling bolts and gaskets.

Except for some scarring by the backhoe during removal and a few similar spots evidently scarred in backfilling operations during installation, the coating and wrapping were in excellent condition. None of the scars indicated damage to the pipe itself.

The pipe lining showed no evidence of crazing or cracking, and it could be indented slightly with a knife blade. We found it difficult to pry the lining loose from the metal with a strong knife blade, but broke off a small piece with a hammer and chisel. This piece was exceptionally resilient, and the exposed metal indicated that a secure bond existed between the lining and the metal.

The butt ends of the pipe showed no pitting or deterioration. Coupling rings were in excellent condition and the coupling bolts, after wiping, showed no deterioration of the original spelter coating. The rubber gaskets were still flexible and live.

A check of the interior showed no encrustation or tuberculation. About a quarter-inch of fine silt rested on the bottom of the pipe, but could be removed readily by wiping with a piece of cloth. Since the line carried raw water only, some sediment was to be expected.

Removal and replacement of the section was scheduled for 6:00 a.m., an hour when there would be the least possible inconvenience to water users. A backhoe uncovered the pipe the previous day. Cover at the site was about five feet and consisted of a very rocky soil.

R. C. Wyatt, R. P. Goldiron of the Danville Water Department, and G. Watkins of J. S. Watkins, Engineers, examine the veteran steel water pipe immediately after its removal.

At the appointed time the water was shut off, a sufficient length of line drained to insure a dry trench, and the Dresser couplings removed with the aid of wrenches and a cutting torch. A cutting torch was used to cut the pipe in two about ten feet from one end, cutting on a bias to expedite removal. The backhoe then lifted out the two pieces and immediately lowered the new 40-foot section. Total interruption time actually was less than an hour and the 24-year-old section was above ground ready for inspection.

RALPH C. WYATT
Civil Engineer
Lexington, Ky.

BEST TRACK... BIGGEST SAVINGS

Allis-Chalmers boosts work hours, cuts costs with the best tractor undercarriage in the business. You get industry's toughest track... best designed track guards ...4 certified, permanently lubricated truck wheels, idlers, support rollers.

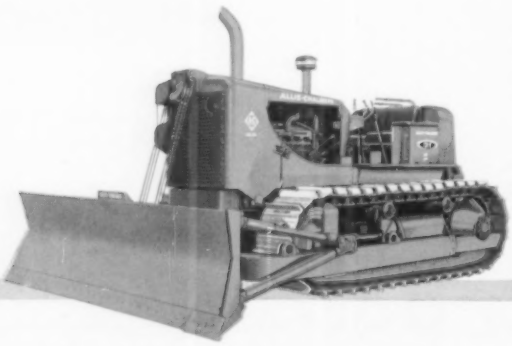
Next time you watch track shoes squeal and grind against jagged rock . . . or see 'em buried sprocket-deep in mud, consider this: Nothing slugs it out with tough conditions like an Allis-Chalmers tractor undercarriage.

Specially heat-treated track shoes, side bars, track pins and bushings are the industry's toughest. Bushings extend into counterbored side bars to seal out dirt, provide more bearing area.

Track guiding truck wheel guards provide a deep-flanged guide channel that keeps track riding true on sprockets, idlers and truck wheels even in the roughest and toughest going. The solid A-frame holds the truck frames in absolute alignment — keeps track running straight.

PERMA-SAFE truck wheels, idlers and support rollers on all Allis-Chalmers tractors roll on tapered roller bearings, are protected against dirt and moisture by Positive Seals. Factory-lubricated, they're certified never to need further greasing.

We invite a maintenance cost comparison with any other tractor undercarriage. We further invite you to inspect the Allis-Chalmers healthy, long-lived tractor engine, the all-steel main frame, double-reduction final drives and many other cost-cutting features. Your Allis-Chalmers dealer will be happy to give you full details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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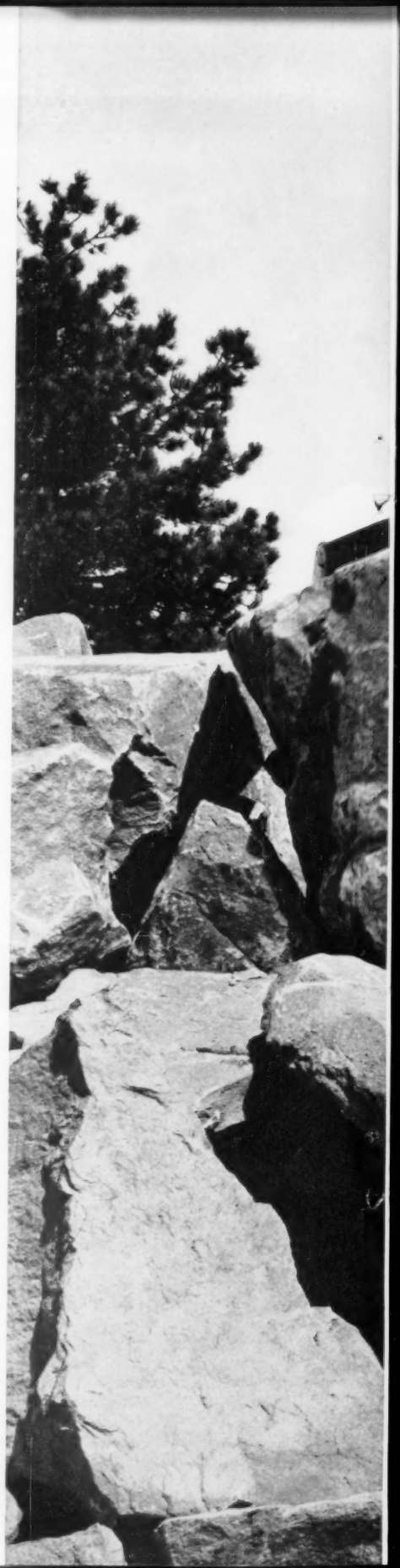
ALLIS-CHALMERS

power for a growing world



21

TURNS ODOR COMPLAINTS

INTO COMPLIMENTS

NEW GOLDEN SOLVEX CONCENTRATE FROM

NATIONAL CHEMSEARCH®

If your odor problems are from sewage plant overload or residential areas moving close to your plant, use golden Solvex concentrate. Solvex controls the growth of sulphide producing microorganisms . . . prevents growth of fungi . . . cuts slime and grease deposits . . . does not affect B.O.D. To control objectionable odors, dilute Solvex with water and apply near the source of the odor.

Leader in Chemical Research — Since 1919

For on-the-spot assistance, see your National Chemsearch representative. Well trained, experienced in dealing with your kind of problems . . . backed by one of the finest research staffs in the industry.

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Biggest Municipal Construction Program

This year Anchorage, Alaska, will spend about $4,800,000 on various construction projects. These projects cover water mains, sewer mains, street construction, a water filtration plant and other miscellaneous items.

The biggest job, in dollar value, is a new 8-mgd water filtration plant to cost an estimated $1,600,000. We expect to take bids sometime in August. New water mains, ranging from six to 12 inches in diameter, will account for another $860,000. Bids will be received on the various contracts, totaling approximately 13.9 miles of work, from the middle of April to the middle of August.

Another $834,000 will be spent on sewers ranging in size from eight to 12 inches and totaling 15.9 miles in length. Again, the work will be handled under several contracts with bidding dates stretched from March to August.

Street improvements make up the second biggest project in dollar value, having an estimated cost of $1,250,000. The bid date was in April.

The work consists of the following approximate quantities: 40,000 lineal feet of asphaltic-concrete pavement 36 feet to 44 feet in width; 120,000 cubic yards of excavation; 100,000 cubic yards of gravel backfill; 170,000 square yards of 2-inch asphaltic-concrete surface; 60,000 lineal feet concrete curb and gutter; 60,000 lineal feet of concrete sidewalk 5 feet wide by 4 inches thick; and 10,000 lineal feet of 10-inch to 15-inch storm sewer including manholes, catch basins and other appurtenances.

A second paving project, estimated to cost $224,000, includes 6,100 feet of asphaltic-concrete pavement; 23,000 cubic yards of excavation; 21,000 cubic yards of gravel backfill; 2,100 tons of asphaltic-concrete surfacing; 12,000 lineal feet of concrete curb and gutter; 12,000 lineal feet of concrete sidewalk; and 4,000 lineal feet of storm sewer with appurtenances.

Smaller projects include a municipal parking lot; a temporary ball park, and duct work for electric and telephone cables.

Last but not least is an expenditure of $1,455,000 for a new public safety building for the Police and Fire Departments.

ROBERT B. SMITH
City Engineer
Anchorage, Alaska

Air Pollution Control Notes

Chicago AP Program Gathers Speed

Chicago's Department of Air Pollution Control has been strengthened recently by the addition of an analytical laboratory and the formation of an air-pollution-control committee, a technical advisory board, and an appeals board to adminster its new air-pollution-control ordinance. Thomas H. Carey, Director of the Department, reports that the new budget is in excess of $500,000, which is about $200,000 more than the Department had in 1957.

New York City Sootfall Declines

For the first time in five years, sootfall in New York City declined somewhat, to a figure of 70.6 average tone per square mile per month. The 1958 figure was 72.0 average tons per square mile per month. Other pollutants remained at relatively low levels, with the exception of oxidants and carbon monoxide, which are produced primarily by automotive vehicles. Coinciding with this improved atmosphere, New York appointed a new air-pollution-control chief. Arthur J. Benline replaces Dr. Leonard Greenburg, who resigned recently to head the department of preventive medicine, Albert Einstein College of Medicine.

New Jet Fuel

Texaco, Inc., has recently announced the perfection of a new jet fuel which may eliminate one of the air pollution problems occasioned by the jet age: excessive exhaust smoke on takeoffs. The new fuel, it was reported, burns at higher temperatures than conventional fuels, without overheating the engine.

Autos vs. Industry

Whereas 80% of the air pollution in Los Angeles can be traced to automotive exhausts, only about one-third of the pollution in San Francisco is due to autos, trucks and buses, according to Benjamin Linsky, head of the Bay Area Air Pollution Control District. Linsky said the major problem in the Bay Area is industrial air pollution.

California Cars Less Smoky In '61

The Automobile Manufacturers Association reports development of a device to eliminate portions of the hydrocarbons generated by internal combustion engines by feeding crankcase fumes back into the engine, to be burned in the cylinders. The Association asserts that these fumes are responsible for a "substantial proportion" of the hydrocarbon emissions of an automobile. All five automobile manufacturers have begun production engineering and tooling for the new devices, which will be installed on all 1961 cars produced for sale in California.

Correction

In the May 1960 item headed "New Regulations," dealing with Louisville, Ky., the cost of the City-County Air Pollution Control Board's study was given as $30,000. The correct figure was $300,000.

Active Research Projects

The American Society of Mechanical Engineers Task Group on Research in Air Pollution is again undertaking a compilation of "Active Air Pollution Research Projects." The inventory will consist of research projects which were active during 1959 and will include the organization and the researcher. Questionnaires went out in December but the Task Group wants to be sure that its compilation is as complete as possible. All organizations and personnel who wish to be included should communicate with: Austin Heller, Chairman, Task Group on Research in Air Pollution, American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y.

—Prepared by Kenneth Kowald

Two brooms working in tandem each night keep the streets in downtown Bakersfield exceptionally clean.

For a Clean City — Keep Sweeping

Bakersfield, Calif., has the reputation of being the cleanest city in the state. A combination of imaginative public relations and good equipment maintenance plays a part, but as Public Works Superintendent Glenn O. Carroll puts it, "We just keep sweeping."

The job of keeping the city clean rests with Refuse and Cleaning Superintendent William Burnett. He uses five Wayne Model 450 sweepers to take care of the city's 200 miles of streets plus a small Wayne industrial sweeper for the parking lots and the median strips.

Two units work together to cover some 30 to 40 curb miles in the downtown area every day. The paved residential streets are cleaned once every three weeks.

Although seasonal, leaf collection plays an important part in keeping the city clean. Leaf season finds the press, radio and television of this city of 54,000 inhabitants encouraging property owners to pile their leaves in the streets for systematic removal. For this work the city utilizes three mechanical leaf collectors, including one constructed by the city shop. Leaves so collected are piled in windrows for transformation to leaf mold and will later be used in the city's parks.

Maintenance

Excellent equipment maintenance and certain modifications made by Chief Mechanic Vern Aldrich play an important role by keeping the machines in top condition—and down-time to a minimum.

To improve crankcase ventilation on his sweepers, Aldrich made a 1-inch venturi tube, attached it to the outside of the radiator, and connected it to the crankcase vent pipe. Vacuum created by the fan-driven air moving through the venturi draws the fumes from the crankcase.

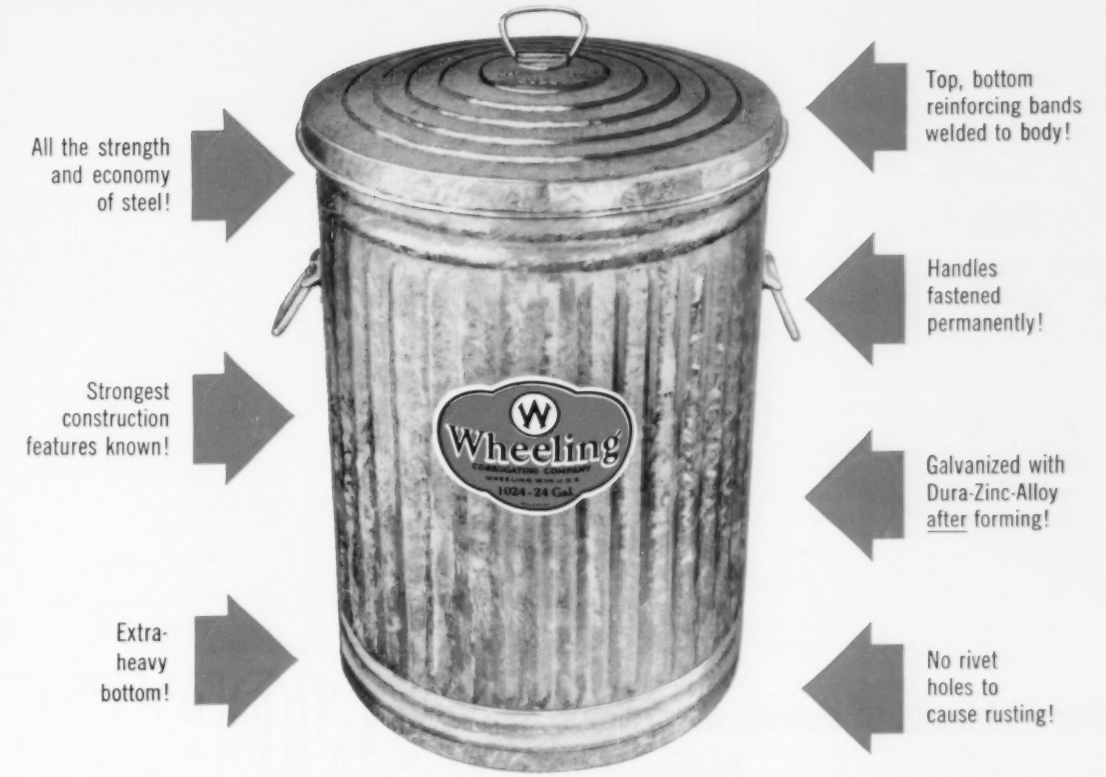
A "Rube Goldberg" device also made in the city shops speeds up broom assembly. The ratchet-operated broom rotator has been converted to electric drive. The heart of the conversion is a Model A Ford differential, one axle of which is made into a hydraulic brake drum, the other connected to the cables rotating the broom. Through a reduction gear, an electric motor provides input power for the differential which transmits the rotation to the axle rotating the brake drum. Pressure on the treadle of the broom rotator actuates the hydraulic brake and stops the rotating brake drum, thereby causing the other axle to turn, thus rotating the broom.

Mr. Burnett believes this is one of the best ideas they have had to date. ◄◄

The covers for the inner faces of the brake housing, now supplied by Wayne for all sweepers, help to keep out dirt and water, thereby cutting brake-drum and lining wear in half.

Wheeling

WHEELING WARE


All the strength and economy of steel!
Strongest construction features known!
Extra-heavy bottom!
Top, bottom reinforcing bands welded to body!
Handles fastened permanently!
Galvanized with Dura-Zinc-Alloy after forming!
No rivet holes to cause rusting!
Wheeling
1024 - 24 Gal.

Lasts and lasts!

Wherever the going's rough . . . wherever you need long-lasting ware . . . be sure to specify Wheeling heavy-duty Ware. Made to last and last, it's always galvanized *after* fabrication . . . always fully protected with a heavy coating of Wheeling's *exclusive* Dura-Zinc-Alloy®.

What's more, Wheeling Galvanized Ware comes in a complete range of styles and sizes—so you get the item that's exactly right for your job. Ask your Wheeling distributor, warehouse or sales office for details. Wheeling Corrugating Company, Wheeling, West Virginia.

Steel

Other Wheeling Items for Municipal use include:

Utility Basket is light, yet strong. Easy to carry. Extra handy for collecting all types of litter.

Heavy-Duty Mop Bucket has tough, birch-wood mop rolls, large foot pedal and positive-pressure wringer.

Heavy-Duty Pail is made of heavy-gauge steel so it can withstand continuous, extra-rough use.

Swing Door Cover with heavy-duty can makes ideal container for indoors or out. Large door opening.

Expanded Metal Refuse Basket has welded reinforcing bands, one-pieced dished bottom.

WHEELING CORRUGATING COMPANY · IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City; Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

With the new streets — curbs and sparkling, silicon carbide-impregnated sidewalks of modern concrete

For 43 blocks of downtown streets, Abilene chose CONCRETE

...the pavement built to stay put for 50 years and more!

In an all-out fight against "downtown blight", Abilene, Texas, modernized the entire business district with all new concrete streets in one giant renewal project.

Abilene shoppers and shopkeepers alike can expect a whole lifetime of enjoyment from their new, attractive concrete streets. Pavement is six inches of portland cement concrete on a 6-inch soil-cement subbase.

The new streets won't be blocked off for expensive surface build-up treatments every few years or torn up for major repairs. Even on the hottest days concrete doesn't get soft, tacky or slick. Traffic can't push its solid surface into ripples and washboards.

There are no "moving parts" in concrete to cause hidden wear. In fact, concrete grows stronger year by year. That's why engineers predict today's modern concrete pavements will far outlast any other type, serve 50 years and more!

Concrete pleases taxpayers, too. Maintenance costs run so low that the moderate first cost isn't just a down payment. Even on street lighting money is saved. Concrete reflects light, so fewer fixtures are needed. City electric bills go down.

Cities everywhere with urban renewal problems are going to concrete. It's the first big step in an effective modernization program.

"The 'new look' of our downtown business district is causing plenty of excitement in and around Abilene!"

Says HENRY NABERS, *Abilene City Manager*

"Our bright new concrete streets and sidewalks are helping to bring shoppers back downtown. Business has really improved since the dedication ceremony.

"The durability of concrete and the low upkeep costs make it the best investment. The good experience with Abilene streets paved with concrete as far back as 1924 helped convince us of that."

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Paper Bags for Speedy Garbage Collection

Carry-out crews can range far ahead of the trucks to pick up refuse. The paper bag contains garbage, the burlap holds newspapers, unbroken bottles and trash.

As the truck pulls up, a member of the crew tosses in the pager bags and empties the burlap sacks. The driver also assists with loading.

The use of paper bags as garbage-can liners made possible the reduction of collection crews in Fredericksburg, Va., from nine to eight men during the summer schedule and from six to five men during the winter schedule. The bags cost the city four cents each, or $13,000 annually. As a result of using bags the city was able to turn to packer trucks instead of open units. Sanitary landfill has replaced incineration.

Prior to the changeover, Fredericksburg used the can-exchange system. (See "Taking Care of the Neglected Twins—Garbage and Refuse," THE AMERICAN CITY, January 1931, p. 121). The garbage cans were washed after each collection with water heated by the incinerator fires, and the building provided shelter for the wash racks, pumps, and pressure tanks.

With the bags, the cans no longer require regular cleaning, and the city replaced the open trucks used to transport cans with new ones having Pak-Mor packing bodies. Sanitary landfill was substituted for incineration, with a Caterpillar D-7 tractor used to conduct trenching, compacting and covering operations. The area-fill method is used over the sealed trenches, utilizing unused material excavated from the trenches.

The bags used are 22 inches high and 44 inches in diameter with a bottom width of eight inches. Although they are not round, they do fit the can snugly when they are opened and spread out.

Although they facilitate other small economies in operation, the bulk of the savings result from the changes previously mentioned. They play an important role in a cost-reduction program in refuse collection and disposal which has resulted in a 31% cut in expenditures during the last six years.

Summer schedules include three pick-ups per week, with two pick-ups per week made during the rest of the year. The charge is $20 per year, payable in quarterly installments. Commercial establishments can receive the same service but the bulk of such establishments are served by private haulers. ◄

Inter-American Sanitation Aid

Two well-known refuse sanitation experts recently took part in a program designed to provide better sanitation in Central and South America. On behalf of the World Health Organization of the United Nations, William Xanten, Director of Sanitation, Washington, D. C., and Abraham Michaels, chief engineer in the Sanitation Division of the Department of Streets, Philadelphia, made a survey of refuse disposal facilities in these countries.

From the middle of April to the middle of May they studied disposal methods in Mexico City, Mexico; San Salvador, El Salvador; Tegucigalpa, Honduras; Sao Paulo and Rio de Janeiro, Brazil; and in Caracas and Maracaibo, Venezuela.

A report of the survey will be presented at the international meeting of the Pan American Health Organization in Havana on August 19th. ◄◄

PROOF THAT CHEVY'S BIG NEW CABS ARE BUILT FOR A BETTER DAY'S WORK!

"THESE TRAILS WOULD SHAKE THE CAB OFF AN ORDINARY TRUCK...BUT NOT OUR CHEVY"

Few trucks are subjected to the body-wracking beatings that are part of a day's work for this Chevrolet Series 60 pulpwood hauler, owned by J. E. Fox, North Carolina logging contractor. As Bobby Fox, a partner in the business points out, "Loaded full-up with pulpwood, we drive right over stumps and potholes you'd think would tear the truck to pieces. These trails would shake the cab off an ordinary truck, but not our Chevy. Chevies are built to hold together longer."

■ No matter where you haul, you'll profit by the new toughness that's built into Chevrolet truck cabs for '60. You'll benefit from a cab that stands up to slam-bang runs over rough terrain, a cab that stays in A-1 shape years longer. Here are some of the ways in which Chevy assures this tight, maintenance-minimizing performance:

1. Tough new longitudinal sills reinforce the underbody; provide a solid foundation for cab sheet metal.

2. Extra-sturdy door openings—box-section pillars and sills assure lasting alignment. Doors stay weathertight with a minimum of maintenance.

3. New double-walled roof makes cab stronger and safer. Box-section pillars provide solid roof support.

There's a world of comfort for you, too. A wide seat, for instance, that softens the ride yet gives you extra support where it's needed. And there's more head room, hip room, shoulder room and leg room for rangy drivers.

First chance you get, visit your dealer and drive a new Chevy. Experience new Torsion-Spring Ride. Check up on Chevy's famous gas-saving 6's and V8's. Then you'll know, for sure, why you can expect thousands of extra miles out of a Chevy; why you can be sure of more work per day at least expense. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

OUR MUNICIPAL NOTEBOOK

BULKY RECORDS

. . . threatened to crowd the city auditor's office out of the Portland, Ore., city hall. Moreover, they presented a real hazard to the city if any sort of disaster struck and destroyed them. Now it has overcome the difficulty by use of Recordak microfilming equipment. He currently uses 2½ ten-drawer film cabinets containing 6,787,455 images recording about 4¼ million documents. All are in duplicate with one copy stored at civil defense headquarters for safety. The work is directed by Ray Smith, city auditor.

* * *

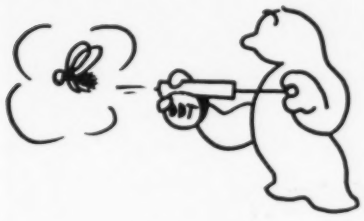
MORE IMAGINATIVE PARK

. . . and playground equipment? You can get some good ideas from Monterey, Calif. This city's Dennis the Menace playground has everything from The Umbrella Tree to The Thing.

* * *

THE MOST POPULAR INSECTICIDE

. . . used in 95 cities in Nebraska for fly and mosquito control is DDT. Second place winner is chlordane, and third, Malathion. This represents studies by the Nebraska State Board of Health. They showed that these cities spend 27c per person per year to eliminate these pests.



* * *

THE SALE OF SLUDGE

. . . as a fertilizer has been an active little business in Grand Rapids for almost 30 years. Most of the sludge is processed on open-air drying beds. However, the city has purchased two Eimco Rotabelt vacuum filters to dehydrate the liquid sludge and a Nichols-Hirshoff multiple-hearth sludge dryer to process it before pulverizing it in a Jeffrey swing-hammer and sacking it. Officials expect to effect economies with this equipment which will enable them to produce larger quantities of the dried material than they can by using the drying beds alone. The sludge, sold under the name of Rapidgro, commands a price of $1 for an 80-pound bag, or $20 a ton. The annual output is 700 to 900 tons. The production and sale of sludge is directed by Huntley DeLano, Superintendent of Sewage Treatment.

* * *

SHOPPER PARKING

. . . can win friends for your business people without loss of revenue to the city by a plan used in roughly 20 cities. Tokens inscribed with the name of the municipality or its Chamber of Commerce are sold to the various merchants who then distribute them to shoppers whose purchases are of a designated dollar size. The plan was developed by the Duncan Parking Meter Corp., Chicago. It requires a meter with a slot able to receive both money and tokens. The token size must not fit other meters or coin-vending machines.

* * *

STREETS ON THE HALF-SHELL

. . . make sense in Tampa, Fla., and other coastal cities where oyster shells are available. Tampa's Public Works Superintendent Roy K. Van Camp can make a stabilized street base with two to four inches of crushed shell, topped with an asphalt surfacing.

* * *

MAGNETIC WATER MEASUREMENT

. . . of water flows can be as accurate as measurement through a venturi meter, according to studies made by John R. Baylis, Engineer of Water Purification, Chicago. The magnetic-type meter tested was a 20-inch flow meter produced by the Foxboro Company; the tests were at the South District Filtration Plant.

If you want more information on these topics, or any other municipal problem, drop a note to:

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

CAPITAL BUDGETING PRACTICAL

. . . in small cities? Certainly. Pampa, Texas, for example, has a "Capital Outlay Budget" that covers a three-year period and permits the city council to make major policy decisions on a factual basis.

* * *

"YOU CAN'T CONVICT AN ARSONIST"

. . . just isn't true. All that you need, according to Gerald W. Shaw, city manager, Greenville, S. C., is a positive enforcement program and a little specialized training for the fire and police forces. A representative of each from Greenville attended the Arson Seminar at Purdue University in 1953. Only three weeks after they returned, the training started paying dividends in convictions. Since then, arson is no longer a major problem.

* * *

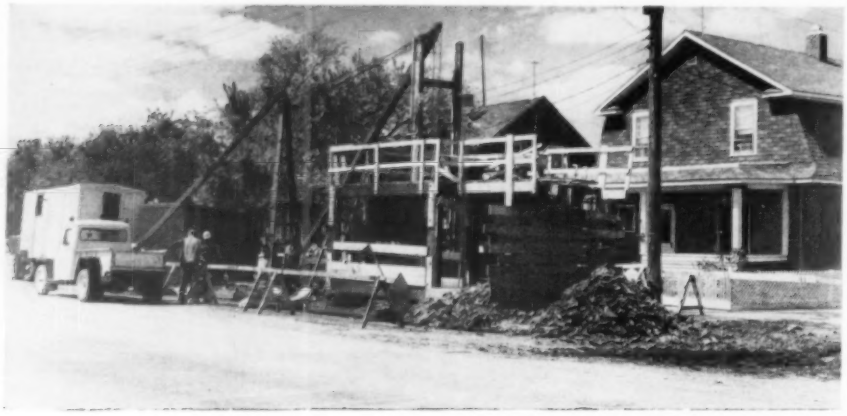
CINCINNATI'S TREE POLICY

. . . provides that any tree removed by the city must be replaced with a new one at an appropriate location. Cincinnati is endeavoring to make itself the flowering crabapple center. This is an informal agreement among the City Council, the Board of Park Commissioners, and the administration.

* * *

OPEN-BODY REFUSE TRUCKS

. . . cost you money if you still are trying to use them. Ten years ago, Cedar Rapids used 17 open-body trucks to collect refuse from 60,000 people. Today the city uses only 11 trucks to collect from 96,000 people. Moreover, the city's 30-man crew works four hours less per week. The trucks are 16-yard Heil Colectomatics. The program is directed by Carl D. Smith of the Cedar Rapids Department of Public Health. ◄



Locating the tunnel entrance shaft between the curb and the sidewalk kept the entire roadway open to traffic.

All the Factors Favored Tunneling

Sewer construction in Saskatoon, Saskatchewan, Canada, often means tunneling, for although experience has taught us that open-cut methods are usually more economical at depths of 25-30 feet or less, unusual circumstances can alter the picture. This proved to be the case on the 1,200-foot storm sewer, 72 inches in diameter, which accounted for most of the 2,000 feet of tunneling which was completed in 1959.

Soil Investigations

Before designing the sewer we made soil investigations to determine what type of material would be encountered. By experience we know sand lenses can be expensive to handle either by open cut or by tunneling; but if tunneling can be carried out below sand lenses, the work usually proceeds without difficulty. Our investigation showed that some large sand lenses were located between the sewer line and the ground surface, one factor in favor of tunneling.

Surface conditions provided another factor. Twenty-Second Street is a major thoroughfare and it had recently been paved with a heavy base course suitable to sustain maximum truckloads. Closing the street to traffic would have been both inconvenient and costly.

We chose to place the sewer under the adjoining wide boulevard or parkway but the location of high-tension lines again hampered open-cut construction and provided a serious hazard to the workmen. Once more the factors favored tunneling.

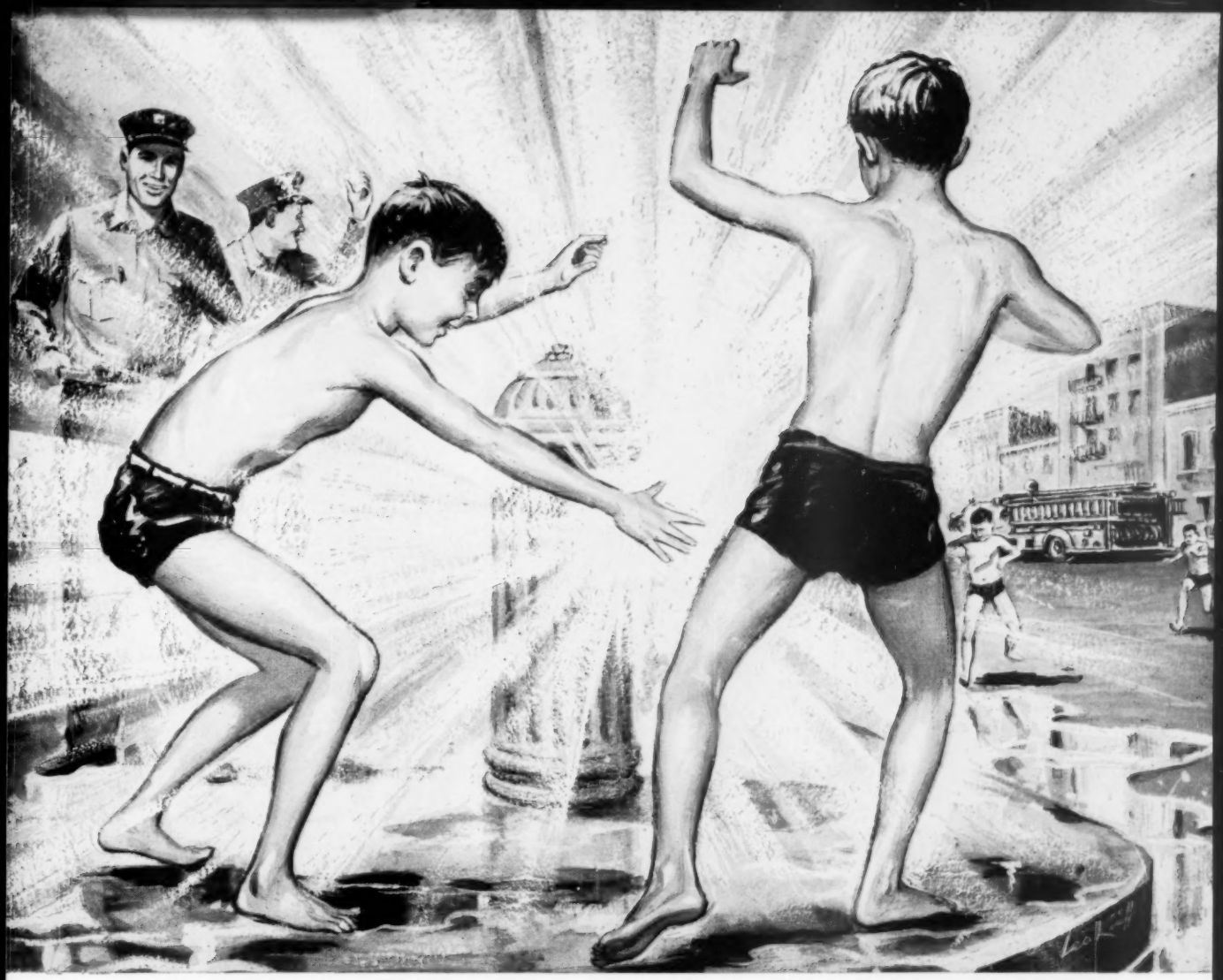
In addition, open cutting would have meant removal and replacement of curbs and sidewalks and extensive landscape repair. Cave-ins, should they occur, would cause extensive damage to fences, shrubbery and lawns. Finally, there was the inconvenience and ever-present danger to pedestrians and residents along the sewer line.

Thus we decided to tunnel and designed the sewer accordingly. A vertical shaft, 25 feet deep, was dug and tunneling began. Installation crews did encounter several sand lenses but fortunately they were neither large nor quicksand. Work progressed at the rate of 13 feet per day. With the use of Armco liner plates, the project involved little danger to the workmen and this method of excavation minimized the hazards to the street area above and to the adjacent homes.

Liner plates were used for the full length of the tunnel and also made up part of the muck car.

Generally, hindsight is better than foresight. However, in this case the two proved identical, for tunneling proved to be the best method of construction even at the relatively shallow depth of 25 feet. Consequently, this method is being employed to extend this project another 4,000 feet in 1960. We are convinced that tunneling operations in many cases are more economical and convenient than other types of excavation.

E. J. Cole, *City Engineer*
Saskatoon, Saskatchewan, Canada



With water to spare!

A community's water system must meet the health and happiness requirements of its citizens—both young and old.

No two municipal water systems are alike. That's why the Layne organization is first in the field—because more than 75 years of pioneering and leadership have provided on-the-job experience with municipal water problems of communities—large and small.

Layne offers complete water system services, from initial geological studies thru well drilling and pump installation to service and maintenance.

A complete staff of hydrologists, engineers, consultants, technicians and field crews are available for any phase of water system planning, installing and servicing. Layne services do not replace, but coordinate the services of consulting, plant or city engineers.

LAYNE & BOWLER, INC., **MEMPHIS**
GENERAL OFFICES AND FACTORY • MEMPHIS 8, TENN.
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

Layne

Water Wells • Vertical Turbine Pumps • Water Treatment

To: Layne & Bowler, Inc.
Memphis 8, Tenn.

Gentlemen: Please send me bulletin No. 100.

Name _____

Title _____

Organization _____

_____

Address _____

City _____ *State* _____

THESE TWO 146-FOOT AERIAL LADDERS permit high-level rescue and fire-fighting work . . . double in brass as extra-high water towers because ladder pipes can be attached to top fly. Automatic self-leveling device keeps ladder from side lean when truck is parked in locations ranging up to 12° from horizontal. They are flanked by two 100-footers.

Chicago reaches

A NEW HIGH in

LATEST ADDITION TO CHICAGO FIRE DEPARTMENT, this conventional-cab Mack-Magirus aerial provides all-weather protection. Its compact chassis occupies considerably less floor or fire space compared with tiller-type ladder truck . . . is easily maneuverable in narrow city streets. Mack 707C Thermodyne power provides the performance to cope with Chicago's heavy traffic.

modern fire protection

The City of Chicago Fire Department, headed by Commissioner Robert J. Quinn, reaches new heights in its modernization program with the addition of four new Mack-Magirus aerials, two with ladders stretching 146 feet . . . two of 100 feet each. Their length, however, is only half the story.

The Magirus ladders are mounted on single, 4-wheel Mack chassis which require much less working and station house space than conventional ladder trucks of comparable capacity.

Furthermore, ladder pipes can be attached to the top fly ladder to convert the aerial to an extra-tall, extra-effective water tower. Fly ladders also feature built-in safety features that prevent overstressing.

These new Mack-Magirus aerials are but one more proof that Mack designs and builds the apparatus that meets the demands of your toughest fire-fighting assignment—cab-forward or conventional . . . choice of engines headed by the famed Mack Thermodyne® 707C . . . standard or automatic transmissions . . . air or hydraulic brakes . . . single rear axle or rear 4-wheel-drive Mack Balanced Bogie with Power Divider which automatically transmits power to the axle with the most traction . . . and gear ratios and special equipment you need.

Ask your Mack representative to show you how Mack can help your department—large or small—have the custom-made protection of fire apparatus that has earned its reputation as the finest built. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7765

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65′ to 146′...COMBINATION LADDER TRUCKS

Stretching the long arm of the law in Milwaukee

Milwaukee, Wisconsin — This metropolitan area of over a million is justly proud of its traffic safety record and its police department. In 1959, the city had the lowest fatality record ever achieved by a community over 250,000. Service and maneuverability of its 80 Solos and 37 Servi-Cars are cited as important factors in Milwaukee's effective traffic control program.

OPENING DAY FOR THE BRAVES — It takes only an hour and a half to park approximately 10,000 cars at Milwaukee's County Stadium when officers mounted on Harley-Davidson Solos and Servi-Cars are on the job.

The force that made Milwaukee famous...

moves on Harley-Davidson Servi-Cars and Solos

Mobility is the key to successful law enforcement! Harley-Davidson police motorcycles supply this maneuverability when only minutes count. They stretch the arm of the law to reach any part of the community quickly whether the trouble spot is traffic, crime, fire or other emergency.

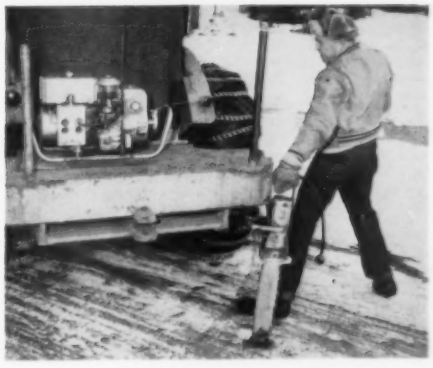
Harley-Davidsons *balance* your effectiveness: *Solos* are the ideal pursuit vehicle. Nothing stops these maneuverable two-wheelers from arriving on the scene of trouble . . . fast. Busy *Servi-Cars* are triple-threats for traffic control . . . parking and meter work . . . residential patrolling. Call your Harley-Davidson dealer, or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin, for free folder on effective police mobility — the Harley-Davidson way.

HARLEY-DAVIDSON

Police Motorcycles

The tractor can lift the man with the chain saw 20 feet if necessary. Note the portable generator at the rear of the tractor.

We Put a Man in a Bucket



The generator and saw provide for flexibility and convenience in operation.

Robbinsdale, Minn., located on the northern outskirts of Minneapolis, has solved the noise problem involved in the year-round task of tree trimming in residential areas.

In place of using high-speed chain saws driven by two-cycle gasoline engines, we have gone to a Mall Model 11E18 electrically operated saw which we believe gives us a greater degree of safety for the operator and considerably reduces the noise level.

To power this electric saw, wherever we would be on tree-trimming jobs, we needed an easily portable, independent source of AC power. To get this we selected an Onan 2500-watt, model 205AJ-IP gasoline-driven generating set for a number of reasons, chief among which was its light weight, quiet operation and ease of starting. On sub-zero days, our little generator starts with one pull of the rope . . . and we're in business.

In actual trimming operations we set the electric plant on the rear platform of our old Minneapolis-Moline Model UTIL tractor, which is equipped with a Lull front end loader. Like most small municipalities, we don't have the funds available for aerial platforms and the like, but we get along quite well with our "bucket" system. An operator can trim trees at practically any height, from ground level to 20 feet.

With the light plant on the rear platform, we run a long cord from the generator, over the top of the tractor cab and engine, to the chain saw in front.

We keep the generator operating constantly (it will run almost four hours on one tank of gas) and start and stop the electric chain saw with a mere flick of the switch.

ARVIL J. OLSON
Superintendent of Equipment

Firemen Fill Out Park Personnel

In La Grange, Ill., Park Superintendent Charles W. Cassell uses local firemen on the city's park maintenance crews. The city's firemen are at the station-house 24 hours and are off 48 hours. The park district uses five of them on their days off, arranging for them to be on call, working only when needed. They perform such work as maintaining skating areas in the winter and general park maintenance during the balance of the year.

In this way, the park district does not have to carry extra full-time men all year around. Superintendent Cassell estimates that the use of the city's firemen on their time off has saved the district about $7,000 on its salary budget each year. ◄◄

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Speedy Parking Meter Collecting System

378 The new 2-second collection system by "Mark-Time" is said to be the fastest, safest, easiest method of collecting from parking meters. For details, write for Stereo demonstration with viewer and a set of stereo color photos—and for the free book "Better Parking Means Better Business," to M. H. RHODES, INC., HARTFORD, CONN.

Taxes Are Inevitable, BUT

379 . . . you don't necessarily have to increase them to finance that much-wanted community ice-skating rink. Greenville, Pa. (pop. 10,000) didn't, and it now has a $70,000 outdoor ice rink and warming house. For details on the "Greenville Story," write YORK CORP., SUBSIDIARY OF BORG-WARNER CORP., 4206 S. GRANTLY RD., YORK, PA.

Smallest 2-Way Mobile Radio

380 This transistorized unit uses only 0.04 ampere on standby, transmits up to 75 watts in high band, fits under the dash, uses no more than 4 tubes, and boasts one-piece design of receiver control and transmitter. For details, write GENERAL ELECTRIC CO., COMMUNICATION PRODUCTS DEPT., 160, MOUNTAIN VIEW ROAD, LYNCHBURG, VA.

Plastic Binding

381 Municipal reports, manuals and presentations are made more attractive and more readable with GBC plastic bindings. Efficient GBC equipment enables you to bind all sizes of loose pages into durable books at savings in cost and time. "New Dimensions in Modern Plastic Building" presents the facts. For a copy, write GENERAL BINDING CORP., 1101 SKOKIE HIGHWAY, NORTHBROOK, ILL.

News for Municipal Fire Departments

382 Ward LaFrance's answer to the growing demand for custom-tailored fire-fighting trucks at a commercial-truck price is the new Premium Custom, available in 16 models, and a wide range of completely-engineered interchangeable options that can be quickly adapted to meet every fire-fighting need. For full facts, write WARD LAFRANCE TRUCK CORP., GRAND CENTRAL AVE., ELMIRA, N. Y.

Tow-Type Bituminous Paver For Driveways, Parking Lots

383 Here's a paver that permits you to repave concave surfaces with as much as 1½" inverted crown, eliminates emptying at the end of the run, can be used to spread aggregates, and is available with optional heated screed for paving with hot or cold mixes. Latest literature gives complete specifications on the Hi-Way Model AS; write HIGHWAY EQUIPMENT CO., 636B "D" AVE. N.W., CEDAR RAPIDS, IA.

Bituminous Distributors

384 These distributors feature a new principle of tank circulation that provides uniform heating, prevents overheating, burning and "hot spots". Recirculation prevents nozzle clogging, and the spray bar is uniformly fed. Front-end controls give the operator unobstructed visibility and keep him out of fumes' way. For details, write SEAMAN-GUNNISON DIVISION OF SEAMAN CORP., P. O. BOX 3025, MILWAUKEE 18, WIS.

Pipe, Valve and Cable Locator

385 Literature just received from GARDINER ELECTRONICS CO., 2545 E. INDIAN SCHOOL RD., PHOENIX, ARIZ., thoroughly describes the features and applications of a new, improved transistorized pipe, valve and cable locator, featuring single turn transmitting and receiving coil cast right into the fiberglass case.

Hydraulic Fiberglass Aerial Bucket

386 The Pitman Pelican enables overhead maintenance crews to go aloft safely and quickly. Its upper boom and bucket are of non-conductive fiberglass. The bucket is self-leveling and supports 300 pounds. Dual controls are in the bucket and truck. The Pelican uses no outriggers, comes in three heights. For details, write PITMAN MFG. CO., GRANDVIEW, MO.

Subdivision Sewage Treatment

387 This summarizes the chief characteristics of the most common methods of treating domestic sanitary sewage, particularly for the remote sub-division not easily able to reach a trunk sewer. It is a section of an engineering data bulletin on the "Oxigest", a factory-built Super Aeration sewage treatment plant, published by SMITH & LOVELESS, INC., DEPT. 10, P. O. BOX 8884, KANSAS CITY 15, MO.

Broad-Beam Sports Lights

388 Wide-Lites will help you keep your parks, playgrounds and othe recreation areas in use after sundown. They give a broad, even light pattern, eliminating "hot spots" and shadows from playing fields—and you can use fewer of them; thus, better lighting at lower cost. For details, write WIDE-LITE CORP., P. O. BOX 191, HOUSTON 1, TEXAS.

New Hydraulic Packing Refuse Collection Body

389 Garbage, rubbish, trash, ashes, refuse—the side-loading Truxmore Pakker accepts, crushes and compacts them all; automatically unloads through rear door. This round-bodied unit introduces a new, hydraulically operated packer blade. It is available in capacities of 18 or 23 yards. Descriptive literature gives full facts; write TRUCK EQUIPMENT CORP., MIDLOTHIAN TURNPIKE, RICHMOND 25, VA.

The Engineering of Water Meter Settings

390 This book analyzes and evaluates factors involved in setting meters under practically all conditions and presents drawings and specifications that can be used as a guide in defining material and workmanship required in producing meter installations most suitable for the water utility. For a copy, write THE FORD METER BOX CO., INC., WABASH, IND.

Marina Brochure

391 "Modern Marinas" includes latest on-the-water installations of steel floating docks, boat slips, access ramps, self-adjusting stairways, floating service patios, as well as ideas on shore arrangements of launching ramps, parking areas, and other details in planning, designing and construction of marina facilities. For a copy, write STANDARD STEEL PRODUCTS MFG. CO., 2836 S. 16TH ST., MILWAUKEE 15, WIS.

Sewer and Culvert Pipe Catalog

392 The 66-page 1960 Lock Joint Pipe Co. catalog on concrete, sewer, and culvert pipe is completely new and contains 9 sections of the latest engineering information on machine-made roller, suspension, cast, special, reinforced concrete pressure, and reinforced concrete subaqueous pipe. Write LOCK JOINT PIPE CO., P. O. BOX 269, EAST ORANGE, N. J.

Self-Service Park, Beach Locker Rooms

393 The Coin-Lok Plan is an automatic, self-service system offering maximum convenience and security to check room operations. It can be applied to existing lockers, relieves users of lock maintenance worries, and makes checking operations carefree and profitable. For details, write AMERICAN LOCKER CO., INC., DEPT. 46, 211 CONGRESS ST., BOSTON, MASS.

Specialized Pavement Markers

394 A new folder describes and gives applications and general specifications for these four-way reflective traffic markers, which are made from specially compounded vinyl, tapered and precoated for lifetime bonding to pavement. For a copy, write TRAFFICAIDE CORP., AUBURN, N. Y.

Truck Bodies

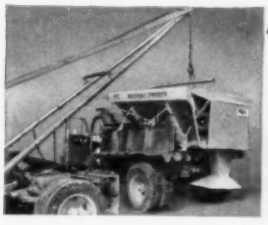
395 Equipment carrier, rescue-ambulance for fire department, mobile utility repair shop, police vehicle—these truck bodies are functionally designed and built with a full square usable loadspace ideally suited to nearly every type of community mobile need. For descriptive booklet, write BOYERTOWN AUTO BODY WORKS, INC., BOYERTOWN, PA.

(See page 46 for more Bulletins)

1960 SPECIFICATIONS for your files

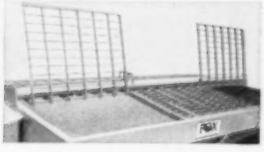
FOX Mountable Materials Spreader

for sand • cinders • chips • salt • calcium chloride



MOUNTING

On or off any standard dump body in only 15 minutes. T-head fasteners, cranks and base adjustment channels make this possible. Truck is quickly freed for other work.

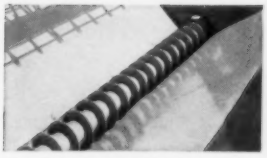


LOADING

Sturdy ⅜" rods make up cover grids that break up lumps. Allow only spreadable material to pass through. Increases spreading efficiency and prevents damage to mechanism.

DASH-MOUNTED CONTROLS

Fingertip control from inside cab makes operation a one-man job. Panel includes—spreader engine ignition and starter switches, volume regulation control and electric clutch switch. Sanding at speeds up to 40 MPH.



FEED AUGER

Heavy-duty feed auger eliminates feed aprons and chains, the source of most frequent breakdowns. Auger mounted on 4 Timken tapered roller bearings, completely shielded from abrasives.

SPINNER

Adjustable for 8 to 40 foot spreading widths. Works close to ground—spreads under parked and passing cars . . . ahead and beneath rear truck wheels for added traction.

GENERAL SPECIFICATIONS

Model	Box Length	Box Width	Weight Empty	Capacity Heaped* (yards)
8S57	8′	80″	2435	5
9S57	9′	80″	2610	5¾
10S57	10′	80″	2849	6½
12S57	12′	80″	3156	8

*4", 6" and 12" height additions to box increases capacity—up to 12 cu. yds. on Model 12S57.

ENGINE —Wisconsin air-cooled, 18 H.P. @ 3500 r.p.m. with starter, generator and enclosed drive reduction.

BODY —10 gauge prime steel. All welded construction with reinforcing ribs.

BEARINGS —10 Timken tapered roller bearings and two sealed ball bearings plus engine bearings.

AUGER —Mounted in two pillow blocks outside of the box, each with two Timken Bearings, fully shielded, mounted on a sleeve with an internal spline.

CONTROLS —Manual controls outside driver's window, standard. Optional electric remote control panel on truck dash.

SPINNER —18" diameter. Height adjustable by 4 position lever for 8 to 40′ spread.

MOUNTING —Quickly attached without drilling holes or welding.

GRIDS —⅜" rods on 3" centers. 4′ and 5′ sections.

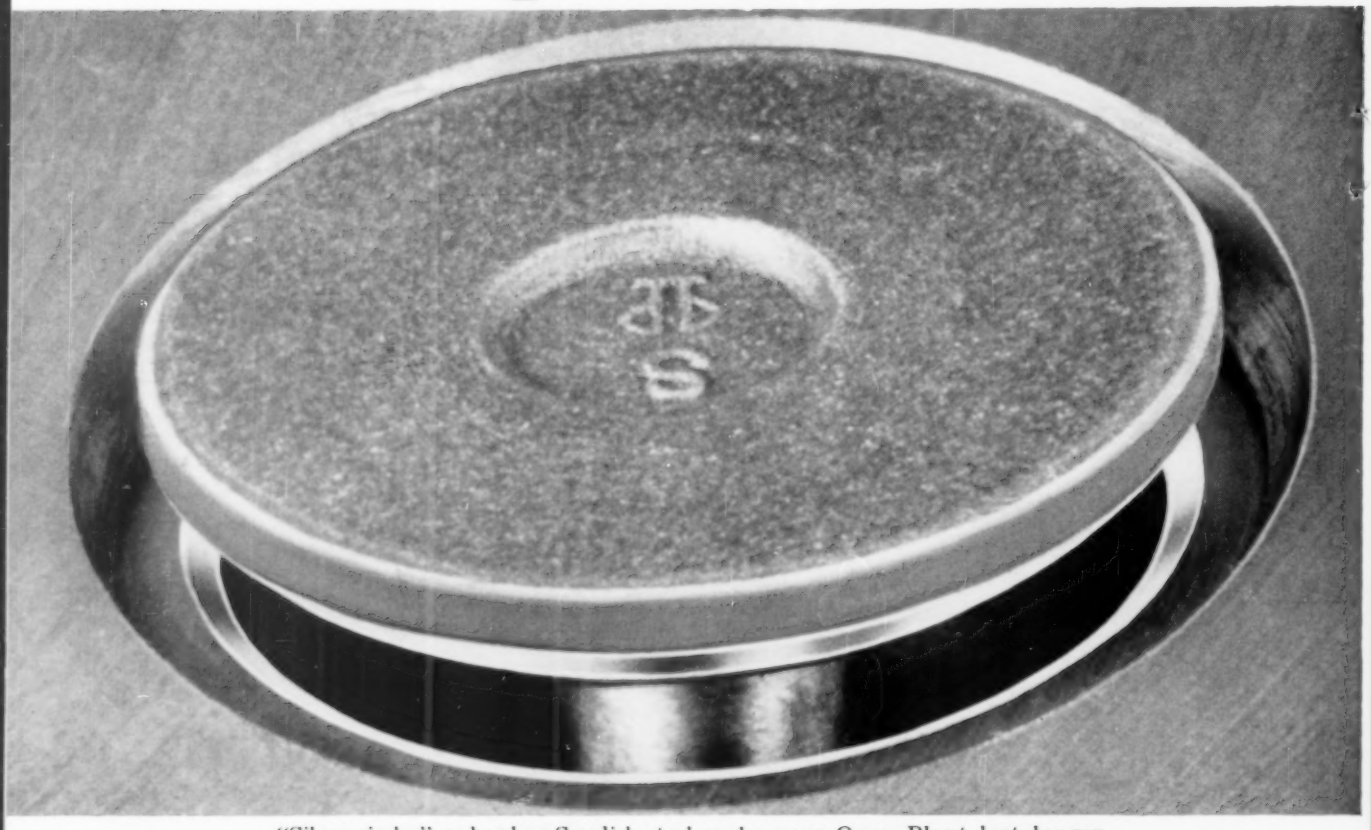
SPECIAL USES —Ideal as Seal-coater for summer road work. Special attachment converts unit to a Trench Filler.

The Fox Materials Spreader will cut your labor, time and equipment expenses to the bone. A catalog . . . case history reports . . . even a no-obligation demonstration are yours for the asking. *Write, call or wire collect for the name of the nearest Fox distributor, who will gladly give you a demonstration.*

FOX RIVER TRACTOR COMPANY
Road Machinery Division
1020 N. Rankin St. • Appleton, Wisconsin
Phone—REgent 4-1451

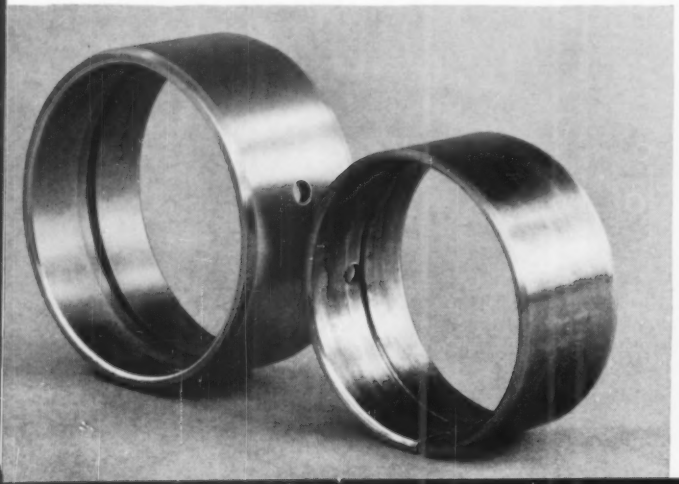
An amazing metal

up to 3 times



"Silver circles" as hard as Swedish steel make your Onan Plant last longer.

Big, brawny bearings—twice the size of many competitors' bearings—give Onan Plants a longer life between overhauls. Onan is built *up* to performance, not down to a price.



To give you greater assurance of top performance, inspectors from an independent laboratory periodically visit our factories to test units and production testing methods.

gives Onan engines

the valve life!

Onan exhaust valves and seats are coated with Stellite, a tough alloy, to greatly reduce wear and burning

Stellite—one of the toughest alloys known—gives the exhaust valves and seats in an Onan engine up to 300% longer life. Scorching punishment—Stellite can take it.

Onan's attention to important details, like valves and valve seats, is what makes Onan Plants so dependable, so long-lasting, so economical.

And, only Onan gives you Performance Certified. Every Onan Electric Plant is run for hours under full load before it leaves our factory to assure ourselves, and you, of getting all the performance and power you paid for. To give you even more assurance, inspectors from an independent laboratory come in periodically to double check our tests and testing methods. Whether you need primary or stand-by generating power, from 500 watts to 230,000 watts, see your Onan distributor. You'll find his name in the telephone classified section in every major city, or write direct.

ONLY ONAN GIVES YOU THIS GUARANTEE

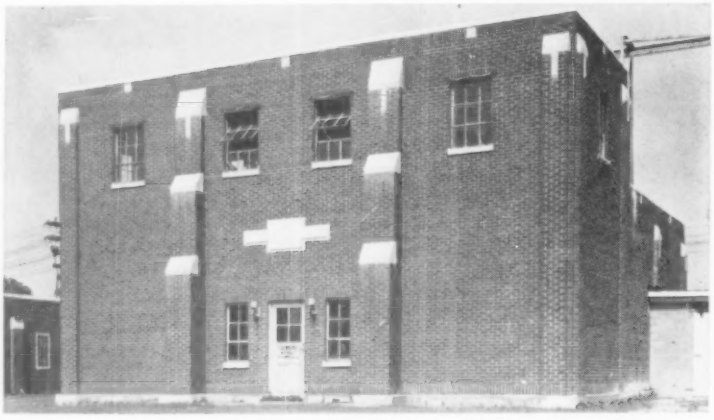
Onan
PERFORMANCE CERTIFIED
We guarantee that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota

Onan®

World's Leading Builder of Electric Power Plants

D. W. ONAN & SONS INC., 2580 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

Use Northern Gravel for Rapid Sand Filter



This is the Water Softening Plant at Evansville, Wisconsin. Another of the many, many such plants throughout the United States that have used filtering sand and gravel from the Northern Gravel Company.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 45 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** **Phone: AMherst 3-2711**

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Stops Pipe Corrosion— Free Sample

396 A new pipe coating team comes in easy-to-handle tape form. It consists of a polyethylene tape, which rustproofs, waterproofs and insulates pipe against corrosion, and a tough, wrinkle-free outerwrap that wraps simultaneously with the tape and protects it against abrasion, wear and physical damage. For details on Chasekote and Chasewrap, write CORR-PREV DIVISION, CHASE & SONS, INC., 26 SPRUCE ST., NORTH QUINCY, MASS.

Tractor Shovels

397 Eight models of these mighty Trojan tractor shovels, with lifting capacities from 6,000 to 24,000 pounds, are described in full in illustrated catalog literature offered by THE YALE & TOWNE MFG. CO., TROJAN DIVISION, BATAVIA, N. Y.

New Wall-Hung Waste Receptacle

398 Here's an attractive waste receptacle that's ideal for washrooms or any place where floor space is limited and neat appearance is important. It empties as easily as a waste basket, is easy to install and keep clean, and saves space and reduces maintenance cost. An illustrated folder on Waste Receptacle No. 6006 is available from THE F. H. LAWSON CO., 801 EVANS ST., CINCINNATI 4, OHIO.

Mildew-Proof Fire Hose

399 This hose has a single jacket and full 600 pounds test pressure. Its rot and mildew-proof and works effectively in frigid weather or damp, tropical weather. For descriptive literature giving full facts on this Multi-Woven 100% Dacron Super Paragon fire hose, write EUREKA FIRE HOSE, 1 MARKET ST., PASSAIC, N. J.

Fabrics for Police and Fire Uniforms

400 These fabrics are made in all weights. They are color fast and uniform in shade, and available in tropical worsted/dacron, serge, whipcord, and gabardine worsted/dacron. For details, and authoritative information on how to purchase good police and fire uniforms, write DAVID E. SINGER, SALES AGENT, FRANKLIN WORSTED CO., 40 E. 34TH ST., NEW YORK 16, N. Y.

Municipal Catalogs

401 Three catalogs currently available from SARGENT-SOWELL, INC., P. O. BOX 810 GRAND PRAIRIE, TEXAS, contain helpful information for police and fire department personnel. They are *Police Equipment Catalog* No. 106; *Fire Fighting Equipment Catalog* No. 105; *Municipal Police Signs Supplies Catalog* No. 104.

Aluminum Outdoor Lighting Products

402 *Catalog* HAL 529 contains complete information on aluminum street lighting standards, floodlighting standards, and traffic signal poles brackets. It is available from HUBBARD ALUMINUM PRODUCTS CO., DIVISION OF HUBBARD AND CO., PITTSBURGH 1, PA.

(See page 48 for more Bulletins)

Insist on the dependable operation of...

MUELLER® FIRE HYDRANTS

AWWA Improved Post Type
4¼", 4½", 5¼", 6¼" Valve Opening Two or Three Way

AWWA Standard Flush Type
4¼" or 5¼" Valve Opening Two or Three Way

Post Type
2⅛" Valve Opening One or Two Way

Flush Type
2⅛" Valve Opening One Way

■ Just one fire hydrant that does not function when needed will disrupt your entire fire protection network.

One way to assure the dependable operation of every hydrant in your system is to insist upon an effective hydrant inspection, maintenance *and replacement* program. With such a program, valuable time is not lost connecting and disconnecting hose to an inoperable hydrant.

To be doubly sure that each hydrant will work every time it is needed, insist on precision-engineered Mueller Fire Hydrants — quality hydrants with dependability "designed-in".

Compression-type main valves, automatically-force-flushed drain valve mechanisms and "O" ring stem seal are just a few of the quality features found in *all* Mueller Fire Hydrants. These features are typical of the great attention to detail in research, design and engineering that becomes a part of every Mueller product.

The hydrants shown here are just a part of the full line of fire hydrants produced by Mueller Co. for municipal, industrial and private fire protection systems.

Write for complete information and specifications.

Full line of inlets available for all hydrants

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 55.

A Mighty Traffic Line Striper

403 These truck-mounted marking machines are designed for big pavement striping operations. They offer multi-line, multi-color performance as well as speed, accuracy and economy. For descriptive literature on these Truck-O-Liners, write WALD INDUSTRIES, INC., HUNTINGDON, PA.

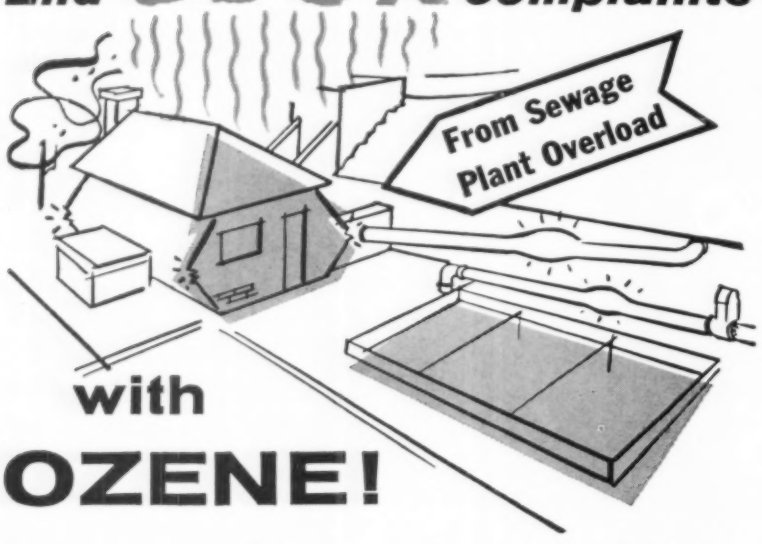
Circular Steel Wire Street Sweeping Brushes

404 UniSweep brushes fit most makes of mechanical street sweepers. They are reported to provide superior sweeping action at minimum cost and to have a long brush life. Their secret is in their construction—round steel wire bristles locked into a radially convoluted unit. For illustrated folder, write ROADMASTER BRUSH CORP., UNION, N. J.

Decreases Sweeper Broom Wear

405 Sanfax 299 increases the efficiency of flusher operation, enables you to provide cleaner streets at a saving in time, water and broom wear. For full facts, write SANFAX CORP., P. O. BOX 604, ATLANTA, GA.

End ODOR complaints



with

OZENE!

Whether your odor complaint problem stems from overload or residential areas moving too close to your plant, you can solve it with Solvay® Ozene®.

Ozene ends odors quickly, easily, economically by (1) masking existing odors while (2) attacking the causes of odors—sulphide-forming bacteria, mold microorganisms. Ozene also cuts slime and grease deposits, eliminates filter flies.

Only 2-to-5 quarts of this concentrate stops odors in 450,000 gallons of sewage! Can be diluted up to 100-to-1 for odor controlling sprays.

Used in sewage, leather, rendering plants . . . land-fill waste disposal projects . . . dried milk, cheese, cannery and other food plants . . . industrial lagoons . . . new excess-capacity sewers . . . drainage ditches . . . incinerators . . . storm sewers . . . sewer breaks . . . sludge de-watering . . . fish market areas . . . refuse cans and trucks . . . kennels, etc.

Write for Ozene test samples. For specific information, please state your odor control problem.

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

Branch Sales Offices: Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit Houston • New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

Spreaders for Resurfacing and Ice Control

406 These cab-controlled units operate at speeds up to 30 mph spreading steadily or intermittently in narrow strips or full traffic lanes sand, gravel, salt, calcium chloride, cinders or any combination of these. There are models to fit any dump truck box. For complete information, write SWENSON SPREADER & MFG. CO., LINDENWOOD, ILL.

Sturdy Waste Receptacles

407 These litter baskets suggest use—when strategically placed at bus stops, in public parks, in alleyways, along main traffic arteries—and they help keep your city clean. Durable, low cost, rigid and galvanized, they are fully described in catalog literature available from DESIGNERS METAL DIVISION, 650 HOFFMAN ST., HAMMOND, IND.

New Sewer Cleaning Machine

408 This unit rods sewer lines up to 700 feet in length. It is compact, powerful, and can be used for preventative maintenance and for threading for bucket machines. It's the Sewer-king 700. For descriptive literature, write O'BRIEN MFG. CORP., 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILL.

Portable Generator Sets

409 Literature from WINPOWER MFG. CO., NEWTON, IA., announces three new 3600-rpm portable gasoline electric plants featuring an automatic idling control designed to reduce noise, save fuel and increase engine life. The new units (1500, 2500, and 3500 watts) are the latest additions to a complete line of engine-generator sets from 600 watts through 100 kw.

Flexible Expansion Joints

410 Expansion joints help prolong the life of equipment in pressure and vacuum systems. Those of butyl rubber tend to retain their flexibility over long periods, even when handling severe chemicals. For descriptive literature, write MECHANICAL GOODS DIV., UNITED STATES RUBBER, ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Better Refuse Collection

411 Six major features enable the Load-Packer 600 to contribute substantially to the improvement, dependability and economy of any refuse collection program. For full facts, request descriptive literature from GAR WOOD INDUSTRIES, INC., WAYNE, MICH.

For Smooth, Clean Contraction Joints

412 A new and more economical method of forming contraction joints in concrete pavement involves the use of extruded Geon vinyl strips, developed by American Sisalkraft Corp., Attleboro, Mass. The strips are vibrated into concrete by a special machine. After the concrete sets, the strips are removed, creating a neat, uniform contraction joint. Write B. F. GOODRICH CHEMICAL CO., 3135 EUCLID AVE., CLEVELAND 15, OHIO.

Clamps, Couplings, Saddles, and Adapters for Pipe

413 Handy source book for sizes, details, material specifications and net prices of approximately 50 different products for fitting the outside diameter of pipe is the 44-page "Net Price Book" offered by SMITH-BLAIR, INC., 535 RAILROAD AVE., SOUTH SAN FRANCISCO, CALIF. It also covers all phases of repairing, coupling and tapping pipelines.

(See page 51 for more Bulletins)

modern versatile

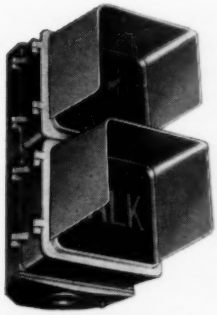
EAGLE traffic and pedestrian signals...

offer a wide range of installation and operation flexibility

YOU GET MORE FOR YOUR MONEY THROUGH THESE FEATURES

- INTERCHANGEABLE MATCHED SECTION DESIGN FOR 8" AND 12" SIGNALS — EASY TO ASSEMBLE
- ALL SECTIONS ARE DIE CAST ALUMINUM WITH FLAT INTEGRAL CLOSED ENDS FOR PERFECT ALIGNMENT
- NEOPRENE GASKETS THROUGHOUT
- ANTI-SUN PHANTOM OPTICAL UNIT
- SILVERED GLASS OR ALZAK PROCESSED ALUMINUM REFLECTORS
- SERRATIONS PROVIDE POSITIVE LOCKING OF SIGNAL OR SECTIONS IN 5 DEGREE INCREMENTS TO POINT IN ANY DIRECTION
- ENTIRE OPTICAL UNITS CAN BE DISASSEMBLED WITHOUT TOOLS

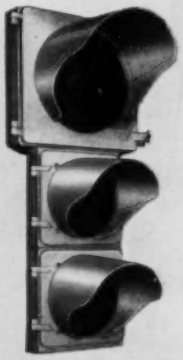
Engineering and construction features of top quality materials built into *every* EAGLE TRAFFIC SIGNAL is your assurance of years and years of continuous high performance. Present and future citizenry and officials will never criticize your choice when you select EAGLE traffic control equipment.



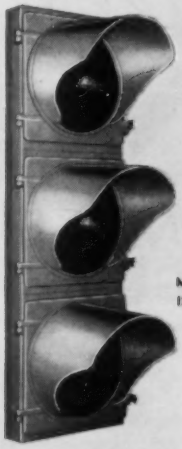
Model KB312
Pedestrian Signal

PEDESTRIAN SIGNALS

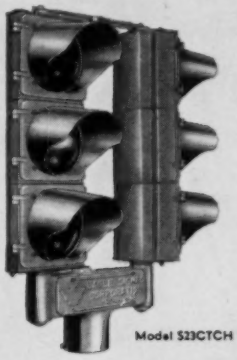
An Eagle exclusive. Distinctive square shape, prismatic lens with 3" high letters in each section that imparts a clear separate message. Illuminated by standard traffic signal lamp — NO TRANSFORMER REQUIRED. Mounts on standard signal brackets.



Model KB293, 12" red, 8" green and amber



Model KB382, 12" lenses



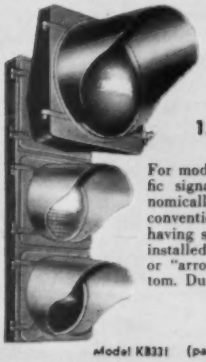
Model S23CTCH

TWO AND THREE-WAY TERMINAL COMPARTMENT SIGNALS

These signals are designed for slip fitter mounting at top of standard 4½" O.D. pedestals. Wide opening and large terminal block provides maximum accessibility and wiring ease.

12" SIGNALS

For extra long range visibility in rural and high speed highways, Eagle's extra large lenses, a full 12" in diameter, provide greater visibility for motorists. Red, Amber and Green lenses are available in either "Wide-Angle" or "Narrow-Beam" type.



Model KB331 (patent applied for)

12" SIGNAL ADAPTER

For modernizing existing traffic signals quickly and economically. Adaptable to all conventional 8" signal heads having square doors. May be installed as a 12" red at top or "arrow" indication at bottom. Dustproof — waterproof.

Model KB579 — 12" Square Signal

LANE SIGNALS

For use where the direction of travel in center lanes is changed at various times of the day. These signal indications are designed to be different and distinctive from regular signal indications. Illuminated backgrounds are red and green with opaque black indications. Can also be used as a pedestrian signal with large 4½" letters.

Write for Eagle's complete descriptive Traffic Signal Bulletin A10. Address Dept. AC-660

EAGLE SIGNAL COMPANY
A DIVISION OF THE GAMEWELL COMPANY
Municipal Division
MOLINE, ILLINOIS

WATER TREATMENT PROBLEMS!

Ferri-Floc
TC TENNESSEE CORPORATION
FERRIC SULFATE

ELIMINATES THE GUESS WORK

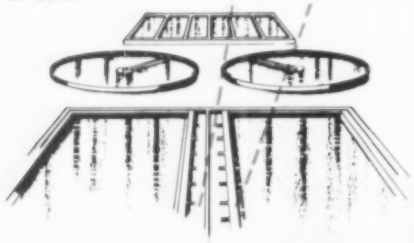
Ferri-Floc produces a smoother, trouble-free operation. Whatever your particular water treatment problem may be, you can depend on Ferri-Floc to do the job more efficiently and economically — Coagulates over a wider pH range — Increases filter runs — Rapid floc formation — Excellent taste and odor control and many other plus factors.

WATER TREATMENT

Efficient coagulation of surface or well water —Effective in lime-soda ash softening—adaptable in treatment of all industrial applications.

SEWAGE TREATMENT

Coagulates over wide pH range and provides efficient operation regardless of rapid variations of raw sewage—Very effective for conditioning sludge prior to vacuum filtration or drying on beds.



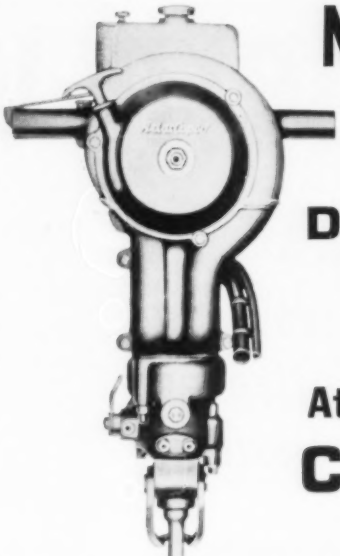
SODIUM SILICOFLUORIDE

For fluoridation of municipal water supplies —Available for prompt shipment.

For complete list of our products see our inserts in Chemical Week Buyers' Guide, Pages 173-176 or Chemical Materials Catalog, Pages 551-554.

For more detailed information make request on your firm's letterhead.

TC TENNESSEE CORPORATION
612-629 Grant Building, Atlanta 3, Georgia



Now! Get ON-THE SPOT DRILLING POWER ... with Atlas Copco's COBRA!

World's lightest motor drill!

Here's a drill you use to fill in on those jobs where cost, terrain, or time prohibits sending out a compressor crew. Weighs just 53 pounds; easily carried by one man. Completely self-contained with gasoline engine that drills 50-60 feet of hole on a tankload (2 qts.) of fuel. Drills in any position up to 45°. Perfect for light drilling anywhere. Write for complete literature. Address: Dept. AC-7

- One-man operation!
- One-man carry; piggyback rig available!
- Easy starting—any weather, any altitude!
- Multi-use flexibility!
- POWERFUL—26 or more feet per hole per hour in hardest granite!

Atlas Copco

545 Fifth Avenue, New York 17, N. Y.

610 Industrial Avenue
Paramus, New Jersey

930 Brittan Avenue
San Carlos, California

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Takes the Guess Work Out of Gas Leak Detection

414 The Heath V Type Leakage Control Survey finds and classifies gas leakage before trouble develops and makes possible efficient programming of maintenance and repair crews. The result? Safety, increased savings, and efficiency. For details, write HEATH SURVEY CONSULTANTS, INC., ZERO LAUREL AVE., WELLESLEY HILLS 81, MASS.

They'll Help You Keep Your Streets and Parks Clean

415 These sturdy street and park baskets are 34 inches deep, 18 inches at the bottom, 22 inches at the top, and weigh 43 pounds. They feature a convenient 6"x16" sign plate to accommodate messages. For current literature, write NORWICH WIRE WORKS, INC., 159 STATE ST., NORWICH, N. Y.

Steel Chain Link Fence

416 This tough steel fabric stays taut, doesn't sag, and is both corrosion and weather resistant. It's available in a wide selection of types and is well-suited for municipal applications —enclosing swimming pools, tennis courts, parking lots, etc. For complete details on Realock Fence, write THE COLORADO FUEL AND IRON CORP., BUFFALO, N. Y., DENVER, COLO., OAKLAND, CALIF.

A Sewage Odor by Any Other Name

417 . . . is still a sewage odor, and no less objectionable. But there are ways to control these offensive odors. Solvex concentrate does by controlling growth of sulphide producing microorganisms, preventing fungi growth, cutting slime and grease deposits—and it doesn't effect B.O.D. For details, write NATIONAL CHEMSEARCH CORP., 2417 COMMERCE, DALLAS, TEXAS.

High-Level Controlled Light for Highway Signs

418 Efficient lighting of highway signs is essential for safety and driving convenience. An outdoor fluorescent luminaire has been developed to provide high visibility illumination for signs, panels, walls, posters and highway markers. It's called Fluoresign. *Bulletin* 300-21 gives full facts; write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Water Services Folder

419 *Bulletin* 100 gives general facts and information on Layne water well systems, pumps, drilling and allied services and equipment. It includes details on shutter screens, water and well treatment for rehabilitating water sources and other phases of water development. For a copy, write LAYNE & BOWLER, INC., MEMPHIS 8, TENN.

Mosquitoes Can't Resist It

420 Here's an insecticide that's said to give 30% better kills than other insecticides and control resistant strains, too. Safe to use, it can be applied by air, thermal fogging and mist spraying. For details on malathian-Lethane and area mosquito control, write AMERICAN CYANAMID CO., AGRICULTURAL DIVISION, NEW YORK 20, N. Y.

"Easy-File, Easy-Find" System

421 . . . puts blueprints, plans, maps and engineering drawings at your fingertips and fully protects them. The files come in 8 lengths, 4 tube diameters, and in 32 sizes. For illustrated catalog on the Staktube steel roll file system, write STACOR EQUIPMENT CO., 329 EMMET ST., NEWARK, N. J.

High-Pressure Steam Cleaner

422 This fully automatic motor steam cleaner handles almost any difficult cleaning job — blasts dirt, grease and grime from motorized equipment, elevator shafts, walls and floors. Oil fired, it burns clean, and so is suited for inside work. For literature, write ELECTRONIC'S INC., 528 CHERRY ST., VERMILLION, S. D.

Traffic and Pedestrian Signals

423 By writing to DEPT. AC-660, MUNICIPAL DIVISION, EAGLE SIGNAL CO., MOLINE, ILL., you can obtain a copy of *Traffic Signal Bulletin* A10, which describes versatile traffic and pedestrian signals that offer a wide range of installation and operation flexibility.

9-Yard Heaped Scraper

424 A new 16-page bulletin points out why the 30-mph, 143-hp, utility size D Tournapull, which is roadable anywhere without permit, is now a better, more productive, more versatile scraper, whether working alone or in a big production fleet. For a copy, write LETOURNEAU-WESTINGHOUSE, PEORIA, ILL.

(See page 52 for more Bulletins)

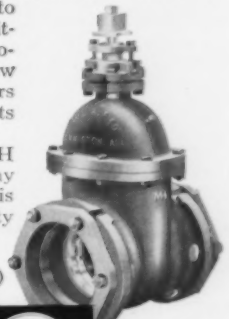
As the Twig is Bent

To understand and appreciate the products and services of a 34-year-old industry, you need to know something of its background. Industrial growth and success do not just happen by accident in our American competitive free-enterprise system. "As the twig is bent, the tree's inclined." Therefore, this is the first of a series of institutional advertisements to illustrate how many years ago the M & H twig was bent to produce today's thriving industrial "tree" known as the M & H Valve and Fittings Company.

To begin with, M & H is an example of how civic spirit pays off. Anniston Chamber of Commerce and a group of Anniston business men in 1925 raised money by public subscription to buy used equipment to manufacture valves and fittings. The M & H plant was built and started production in 1926. In the following 5 years, the new Company gave little indication that within 25 years M & H would be one of the leading industries in its field.

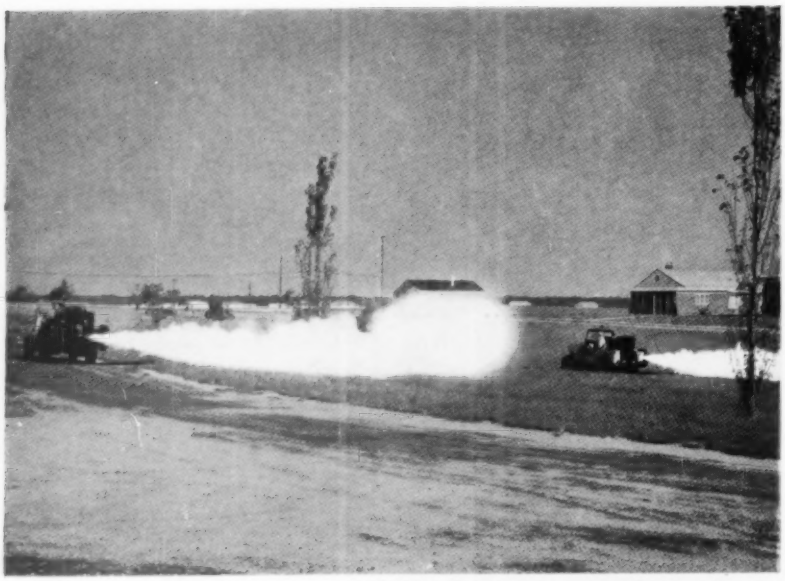
How, when and why these highlights of M & H history occurred, may be a matter of interest today to water works engineers and public officials. It is the background in which M & H product-integrity is deeply rooted.

(No. 1 of a Series)

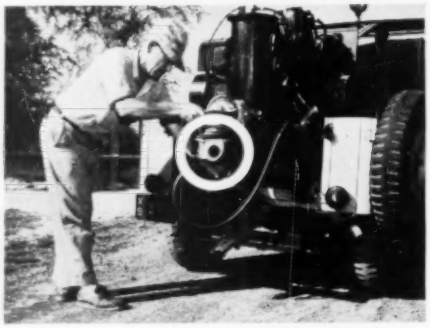


M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

SUBSIDIARY OF W WALWORTH



Fogging with LETHANE 384 *in Cape May County, New Jersey.*



HEAT-STABLE LETHANE 384 *is unaffected by high temperature as it passes this critical hot zone on the fogging machine.*

Most effective knock-down agent for fogging...

LETHANE 384

Anyone faced with the problem of controlling mosquitoes . . . and the responsibility of using public or private funds to accomplish it . . . should be totally familiar with LETHANE 384. Highest percentage of knock-down and kills is assured when LETHANE 384 is used as recommended in fogging concentrates and adulticiding sprays . . . alone, with DDT or with malathion. Be sure your mosquito control program is built around economical, heat-stable LETHANE 384. Write to our Sanitary Chemicals Dept. for complete information.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

LETHANE *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

New Armco Pipe Bulletin

425 This 16-page catalog will give you full facts, specifications and application data on Armco corrugated metal pipe and pipe-arch, for use in such jobs as storm sewers, sanitary sewers, utility conduits, culverts, and tunnels. For a copy, write ARMCO DRAINAGE & METAL PRODUCTS, INC., DEPT. A, 6400 CURTIS ST., MIDDLETOWN, OHIO.

Bright by Day, Brilliant at Night

426 *Catalog* V-160 gives full facts on a traffic aid kit that will help you better delineate traffic hazards, traffic islands, barrier boards, bridge abutments, curbs. For a copy, write CATAPHOTE CORP., TOLEDO 10, OHIO.

Controls for Off-Street Parking

427 *Bulletin* No. 580 explains how Parcoa equipment can help you provide your community with automatic low-cost, revenue-producing off-street parking controls that operate around the clock smoothly, safely and dependably. For a copy, write JOHNSON FARE BOX CO., SUBSIDIARY OF BOWSER, INC., 4621 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

Large Rotary Distributors for Trickling Filters

428 These distributors are the hydraulically-driven type used in treating sewage and are for trickling filters up to 200 feet in diameter. Drawings, dimensions and specifications, capacity data, optional mercury and mechanical seal units, and Aero nozzles are given in *Bulletin* 6505, available from YEOMANS BROTHERS CO., 1999 N. RUBY ST., MELROSE PARK, ILL.

Keep Unpaved Roads Dust-free

429 "The Solvay Calcium Chloride Road Book" points out how you can save on unpaved road maintenance, reduce the loss of your road materials, and minimize the possibility of accidents caused by dusty roads. For a copy, write ALLIED CHEMICAL, SOLVAY PROCESS DIVISION, 61 BROADWAY, NEW YORK 6, N. Y.

Rechargeable Flashlight Batteries

430 Firemen, police, and municipal utility crews needing several hours of reliable light from flashlights, are offered a rechargeable battery cartridge. It gives three hours of steady burning on a 16-hours charge. Just plug the battery in any 110-volt AC outlet. For details, write BATTERY DIVISION, SONOTONE CORP., ELMSFORD, N. Y.

Fire Hydrant Facts

431 The K-10 hydrant is available in three sizes—4", 4½" and 5"—and in a variety of pipe and connections. It is fully described in *Bulletin* 591, which explains how it combines lower installation and maintenance costs with maximum protection. Write KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

What Makes a Traffic Line?

432 A 16-page illustrated brochure offered by VEON CHEMICAL CORP., 22-09 BRIDGE PLAZA NORTH, LONG ISLAND CITY 1, N. Y., tells what makes Perma-Line pavement markings effective traffic control devices. It also shows latest installations and gives specifications.

(See page 54 for more Bulletins)

starting . . .

a century of tax-saving service

permanent rust-resistant CAST IRON PIPE

Today 68 American cities are still using cast iron water mains installed a century or more ago. No nonmetallic substitute has ever matched this record for longevity and long run economy.

Long life — lowest long run cost — are two of many reasons why Cast Iron Pipe is the best investment your community can make for new installations or extensions of water mains or sewer lines.

Lowest Maintenance Cost

Maintenance cost of Cast Iron Pipe is far below that of any other pipe material which has been in use long enough for the recording of conclusive data. This is due to its effective resistance to corrosion, its wide margins of safety in strength to withstand impact, beam and crushing stresses.

Finally, there's the factor of —

Re-use or Salvage Value

When water mains must be abandoned, re-routed or replaced by larger sizes, Cast Iron Pipe can be re-used or salvaged at a further substantial savings.

This advertisement is published in the interests of the Cast Iron Pressure Pipe Industry by .....

WOODWARD IRON COMPANY

Since 1882

WOODWARD, ALABAMA

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Lightweight Diaphragm Pump

433 This new aluminum-alloy pump, with 3-inch connections and a capacity rating of 4,300 gph, is ideal for construction applications where continuous pumping of sludge, slurries and debris-laden liquids is required. It comes equipped with 3-hp gasoline engine but is available with 1½-hp electric motor. For literature, write MIDLAND PRODUCTS CO., ROUTE 17, MAHWAH, N. J.

Garbage Cans, Refuse Baskets, Pails and Buckets

434 These and similar items for municipal use are offered in a complete range of styles and sizes. They are well designed, able to withstand rough handling, and built for long service life. For a full-line description, write WHEELING CORRUGATING CO., WHEELING, W. VA.

Electric Photometer for Water Analysis

435 Adaptable for use in water analysis, the Klett Summerson electric photometer can be used for any determination in which color or turbidity can be developed in proportion to the substance to be determined. For details, write KLETT MFG. CO., 179 E. 87TH ST., NEW YORK, N. Y.

4-Wheel, Twin-Engine Street Sweeper

436 This new street sweeper offers outstanding performance with economy, whether at work on residential streets, congested downtown areas, parks or airports. It maintains full broom speed at all times under all conditions. For descriptive literature, on the Model TE, write MOBIL SWEEPER DIVISION OF THE CONVEYOR CO., 3260 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Restore Concrete Slabs to Proper Grade

437 A 16-page booklet describes through text and illustration the simple and comparatively inexpensive "Mud-Jack" method of correcting uneven settlement of concrete sidewalk, curb and gutter, street and driveway. Slab preparation and slurry consistency are gone into carefully. For a copy of "Mud-Jack Method for Concrete Maintenance," write KOEHRING DIVISION OF KOEHRING CO., MILWAUKEE 16, WIS.

New Floodlight Bulletin

438 This 10-page publication outlines value of floodlighting, application data and product information on full line of filament, mercury vapor and fluorescent units available from G.E. Photos show uses in recreation areas, architectural and ornament lighting, parking and service areas. For a copy of *Bulletin* GEA-7201, write GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

Precast Concrete Flat Base Pipe

439 . . . can decrease construction costs of utility galleries, underpasses and utility manholes by as much as 30%. It is quickly installed, has the necessary rigidity to resist sagging and tight joints to prevent infiltration. For descriptive literature, write AMERICAN-MARIETTA CO., CONCRETE PRODUCTS DIV., 101 E. ONTARIO ST., CHICAGO 11, ILL.

High-Capacity Submersible Pumps

440 In describing the uses of these heavy-duty submersibles, *Bulletin* B-1300 outlines the advantages they offer in deep well pumping and as in-line boosters. The pumps have a capacity range up to 3300 gpm and ratings up to 125 hp. Write SUMO PUMPS, INC., 23 BROWN HOUSE RD., STAMFORD, CONN.

Sanitary Washfountains

441 These washfountains are available in three heights. They are pedal-controlled, can be used by two people at a time, and emit tempered water from a central sprayhead. *Bulletin* K1204 gives full facts on Duo-Washfountains. For a copy, write BRADLEY WASHFOUNTAIN CO., 2333 W. MICHIGAN ST., MILWAUKEE 1, WIS.

Truck Cranes and Shovels

442 In this 6-page gatefold folder, "QUICK-WAY" TRUCK SHOVEL CO., P. O. BOX 1800, DENVER, COLO., describes its three family groups of new truck cranes and shovels and the powerful, heavy-duty carriers built for each unit.

Unbreakable Street Light Globes

443 Excellent light transmission, lightweight, and exceptional resistance to breakage are prime features of these fiberglass globes. A 4-page brochure also reports on other features, shows test data facts, and illustrates how the globes will fit all major models of popular luminaires. For a copy, write COMMERCIAL PRODUCTS DIVISION, PLASTIC AGE SALES, INC., 14300 DAVENPORT RD., MINT CANTON, CALIF.

New Line of Electronic Warning Signs

444 "Surgelites" combine electronic flashing lights with neon letters that spell out a continuous warning. Literature reports they can be seen flashing 300% sooner than conventional warning lights. For details and application information, write ELECTRONIC LIGHTS, 1713 N. ASHLAND AVE., CHICAGO 22, ILL.

Two New Water Meters

445 ROCKWELL MFG. CO. announces two new larger-capacity "magnetic drive" Sealed Register water meters The 1½-inch has a capacity of 100 gpm; the 2-inch, 160 gpm. They complete this line of meters, which includes also ⅝", ¾" and 1" units. For further information, write the company's MUNICIPAL AND UTILITY DIVISION, 400 N. LEXINGTON AVE., PITTSBURGH 8, PA.

Judging Engine Quality

446 This 28-page handbook emphasizes the features of various designs which provide top performance for minimum cost (original and/or final), and details the importance of design, material and workmanship; reliability; cost of operation; parts and service availability; trade-in or resale value. For a copy of *Form* 20185-DN935, write CATERPILLAR ENGINE DIVISION, PEORIA, ILL.

Pinpoints Water Leaks

447 Model L-60 is a new, portable transistorized leak detector that enables simple, rapid detection and pinpointing of underground water leaks. Its features are detailed in literature, available from THE GOLDAK CO., INC., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

Swimming Pool Products

448 A new 36-page catalog describes and illustrates more than 400 products for building, improving and maintaining all types of swimming pools. It's published by PARAGON SWIMMING POOL CO., INC., PLEASANTVILLE, N. Y.

Power Take-Offs for Trucks, Tractors

449 Spicer power take-off units can add usefulness to your trucks and tractors, limited only by your ingenuity. Power take-offs and PTO joints are only two of the products in the Spicer line of equipment designed to serve your fleet of trucks and tractors. For full facts, write DANA CORP., DEPT. 86, TOLEDO 1, OHIO.

Metal Gratings

450 Riveted, welded, pressure-locked—there's an Irvico metal grating for every purpose. And they're available in steel, aluminum and other metals. For descriptive catalog, write IRVING SUBWAY GRATING CO., INC., 1530 27TH ST., LONG ISLAND CITY 1, N. Y.

Rubber Expansion Joints, Flexible Pipe

451 *General Catalog* 850 covers a line of custom-made rubber expansion joints and flexible pipe, successfully used in recirculating water systems and pump discharge lines to absorb vibration and noise, prevent stresses due to pipe expansion and contraction and to compensate for minor misalignments. For a copy, write GENERAL RUBBER CORP., 57 SUMMIT ST., TENAFLY, N. J.

A New Line of Quarter-Turn Valves

452 . . . just introduced under the name Oriseal, is particularly well suited to curb-valve applications. Three models are available, in sizes ranging from ¾" through 2", each with a working water pressure rating of 125 psi. For literature and complete test reports, write MUELLER CO., 512 W. CERRO GORDO ST., DECATUR, ILL.

Improved Pipe Coupling

453 A new Normac permanent pipe coupling holds higher pressures and permits greater deflection. It is available with a choice of plain, bead tipped or insulating gaskets. Write on your letterhead to NORTON-McMURRAY MFG. CO., 919 N. MICHIGAN AVE., CHICAGO 11, ILL.

Perforated Metal Screens

454 . . . for water treatment and sewage disposal applications are the subject of a new brochure that shows typical screen assemblies and shapes, perforation and slit configurations, application principles, open area equivalents and complete range of sizes. *Bulletin* C101 can be obtained from CROSS METAL PERFORATED METALS PLANT, NATIONAL-STANDARD CO., NILES, MICH.

When an Accurate Time Record Is Essential

455 The complement of Lathem time-recording equipment includes precision-built machines for parking lots, payrolls, booking and releasing prisoners, and public buildings and watchmen's rounds. They are designed to eliminate time leaks and to increase efficiency. For descriptive literature, write LATHEM TIME RECORDER CO., 92 THIRD ST., N. W., ATLANTA, GA.

Valves for Water Filtration Plants

456 These square-bottomed double-disc gate valves are used to regulate water flow in the feed line to filter bed and to regulate water flow in the discharge line of centrifugal pumps, or from a reservoir where there's unbalanced pressure against the gates. For descriptive literature, write M & H VALVE AND FITTINGS CO., ANNISTON, ALA. Request *Catalog* No. 52.

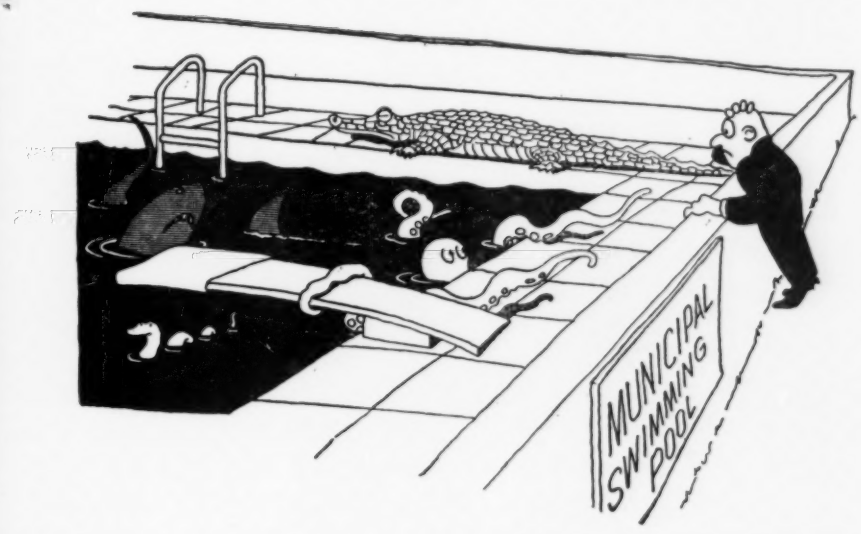
(See page 58 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.



THERE'S AN ANSWER TO ALMOST EVERY PROBLEM!

(See other side)

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send literature on items numbered as follows, starting on page 42

378	390	402	414	426	438	450	464	476	488	500
379	391	403	415	427	439	451	465	477	489	501
380	392	404	416	428	440	452	466	478	490	502
381	393	405	417	429	441	453	467	479	491	503
382	394	406	418	430	442	454	468	480	492	504
383	395	407	419	431	443	455	469	481	493	505
384	396	408	420	432	444	456	470	482	494	506
385	397	409	421	433	445	459	471	483	495	
386	398	410	422	434	446	460	472	484	496	
387	399	411	423	435	447	461	473	485	497	
388	400	412	424	436	448	462	474	486	498	
389	401	413	425	437	449	463	475	487	499	

I would also like to receive manufacturer's booklets on.....

.....

.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 6-60

A Listing of Your Business Connection Is Important

To THE AMERICAN CITY's Catalog Supply Department:
Please send me further information on products described in "Purchasing News" section beginning on page 203, as circled below:

701	706	711	716	721	726	731	736
702	707	712	717	722	727	732	737
703	708	713	718	723	728	733	738
704	709	714	719	724	729	734	739
705	710	715	720	725	730	735	740

I would also like to receive manufacturer's booklets on.....

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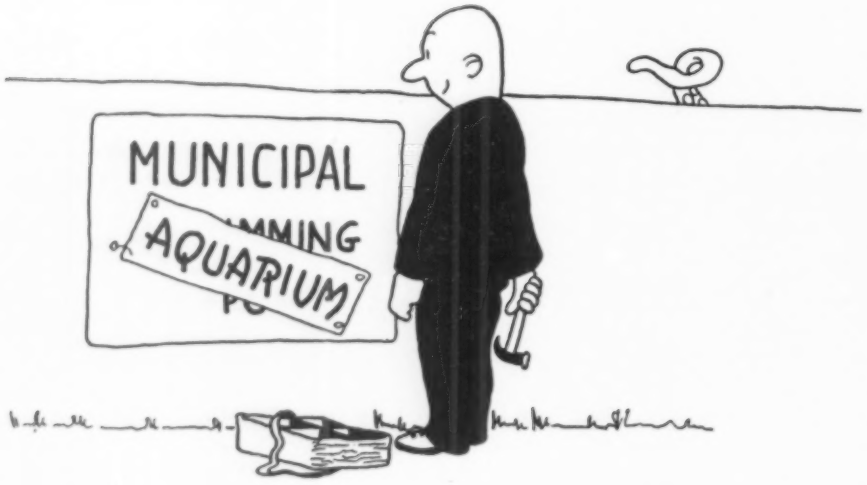
A Listing of Your Business Connection is Important



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FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

UNIVERSALLY ACCEPTED AS THE MOST DEPENDABLE PARKING CONTROL EQUIPMENT EVER PRODUCED. BACKED BY OVER TWO DECADES OF ENGINEERING EXPERIENCE, TODAY'S "HEAVY-DUTY" DUNCAN-BUILT PRODUCTS OFFER TOP OPERATIONAL EFFICIENCY AT ROCK-BOTTOM MAINTENANCE COSTS PLUS GREAT VANDAL RESISTIVE STRENGTH TO COMBAT THE GROWING PROBLEM OF COSTLY METER VANDALISM. INVESTIGATE THE GENUINE ECONOMY OF DUNCAN'S DEPENDABLE OPERATION. TWO THOUSAND CITIES THROUGHOUT THE WORLD ENJOY THIS ADVANTAGE DAILY . . . WRITE TODAY .

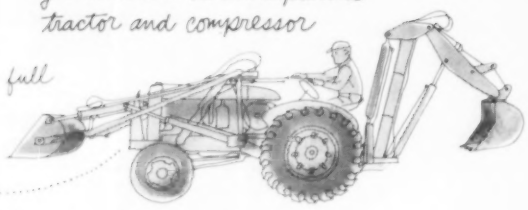
DUNCAN PARKING METER
Division of Motor Products Corporation
835 NO. WOOD STREET • CHICAGO 22, ILLINOIS

HOW SCHRAMM HEAVY PNEUMATRACTOR CAN HELP YOUR CITY CUT COMPRESSOR AND TRACTOR COSTS!

1 heavy Pneumatractor gives you two units in one

yet costs less than separate tractor and compressor

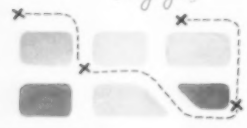
Schramm full 125 cfm compressor here



plus... husky tractor with back-hoe and front end loader

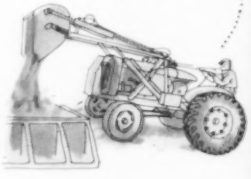
2 heavy Pneumatractor cuts operating costs

one man drives compressed air to any job



same man operates any air tool

same man sweeps hauls, loads, digs grades, etc.

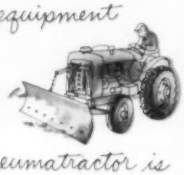


3 you eliminate

pushing

lost time

idle equipment



Pneumatractor is always busy!

4 and here are price comparisons!

Tractor	$ 3,600
Loader	$ 2,250
Backhoe	$ 3,900
Schramm 125 cfm Compressor	$ 3,720
If bought separately at average prices	$13,470

Schramm Heavy Pneumatractor . . . $12,421.50

Write for Catalog 5740. And see your nearest Schramm Dealer listed in the Yellow Pages.

Schramm PNEUMATRACTORS

Self-propelled Air Compressors

603 North Garfield Ave., West Chester, Pa.

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 55.

Water Works Pumps

459 *Bulletins* 1004 and 1005 give data on De Laval water works pumps with capacities ranging up to 100 million gallons per day to meet all water works requirements. For copies, write DE LAVAL STEAM TURBINE CO., 866 NOTTINGHAM WAY, TRENTON 2, N. J.

For Better Lighting of Runways, Taxiways

460 *Bulletin* No. 160, Section 900, describes, gives applications for, and specifications of the Nine-Fifty Series flush prismatic airfield runway lighting fixtures, developed to provide greater safety and better all-weather capability for flying operations. For a copy, write MULTI ELECTRIC MFG. INC., 4223 W. LAKE ST., CHICAGO 24, ILL.

High Volume Whiteprinter

461 A dry-diazo reproduction machine with optional features that will meet practically any production requirements, is announced by PARAGON-REVOLUTE DIVISION, CHARLES BRUNING CO., MOUNT PROSPECT, ILL. It is called the Paragon-Revolute Star and is available in three printing widths and in models with 4000-, 5000-, and 7500-watt lamps.

Front-End Wheel Loader

462 New literature from ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS., announces the new TL-12 front-end wheel loader, a 4-wheel drive unit with carrying capacity of 4,000 pounds, static lifting capacity of 9,500 pounds, and Tractomatic transmission. Four buckets are available from 1 to 2 cubic yards.

Semi-Vehicle Actuated Controller

463 When used as a standard control unit, the M-20 SVA operates upon actuation of any type detector in the street having minor traffic movement. It also operates as a pre-timed control using the recall circuit. Accessory units increase its usefulness. For detailed literature, write THE MARBELITE CO., INC., SALES PROMOTION DEPT., 177 N. 10TH ST., BROOKLYN, N. Y.

"How To" Tractor Booklet

464 TRACTOR & IMPLEMENT DIV., FORD MOTOR CO., BIRMINGHAM, MICH., offers this 23-page booklet to help you improve your operating techniques with the Ford Industrial tractor-loader-backhoe. Schematic drawings illustrate important "do's and dont's". Other sections deal with profile curves to plot reach and depth, backhoe bucket selection, and operating the Select-O-Speed tractor.

Water and Sewage Plug Valve

465 *Bulletin* AE-1059-A reports on construction features and advantages of these new eccentric valves, designed for economical flow control in sewage plants and water works. They're available in sizes 2" through 12" and for working pressure of 150 pounds. Write W-K-M DIVISION OF ACF INDUSTRIES, INC., P. O. BOX 2117, HOUSTON, TEXAS.

(See page 61 for more Bulletins)

Plain talk about machine dictation:

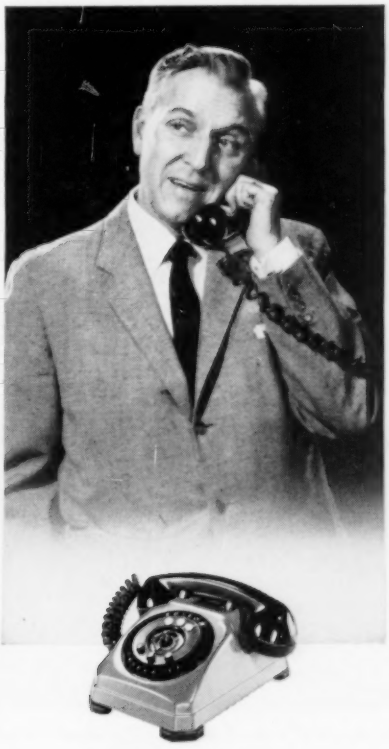
"Our work is different... bet you don't have a dictating machine for us!"

No bet . . . with Edison there's no need to gamble with compromise dictating equipment! In Edison Voicewriter's *complete* line, there are models that are right for you, right for each particular dictation requirement in your department.

Important, too, you deal with a nation-wide service organization, Edison Voicewriter, with over 70 years' experience in business dictation.

For officials and "volume" correspondents . . . Voicewriter!

The Voicewriter offers every convenience for the busy official or correspondent. Lets him "talk away" his work—*whenever he's ready* —just by taking the mike. The Edison Voicewriter Diamond Disc is easy to handle—easy to transcribe from.



For your "occasional" correspondents . . . Televoice!

Televoice is ideal for agencies or departments where many individuals require dictating facilities. Connects each one to a central transcribing point through a handy dictating phone. Work flows steadily and smoothly, gets out faster, much more economically.

For officials on the go . . . Midgetape!

The department of streets, fire inspectors, even the board of health can use the palm-size Midgetape recorder for so many jobs! To record conversations . . . for verbal note taking during tours of inspection. Battery operated, weighs only 3 lbs.

Mail coupon today for details on the Voicewriter system to match your own special needs. No obligation, of course.

To: Edison Voicewriter, West Orange, N. J., Dept. AC-6

Okay, I'm interested! What do you think Voicewriter can do for me and my department?

Name_____

Department_____

Street_____

City_____ Zone_____ State_____

Edison Voicewriter

A product of Thomas A. Edison Industries, McGraw-Edison Company, West Orange, N.J. In Canada: 32 Front Street W., Toronto, Ont.

McGRAW EDISON

L O N G - T E R M E C O N O M Y

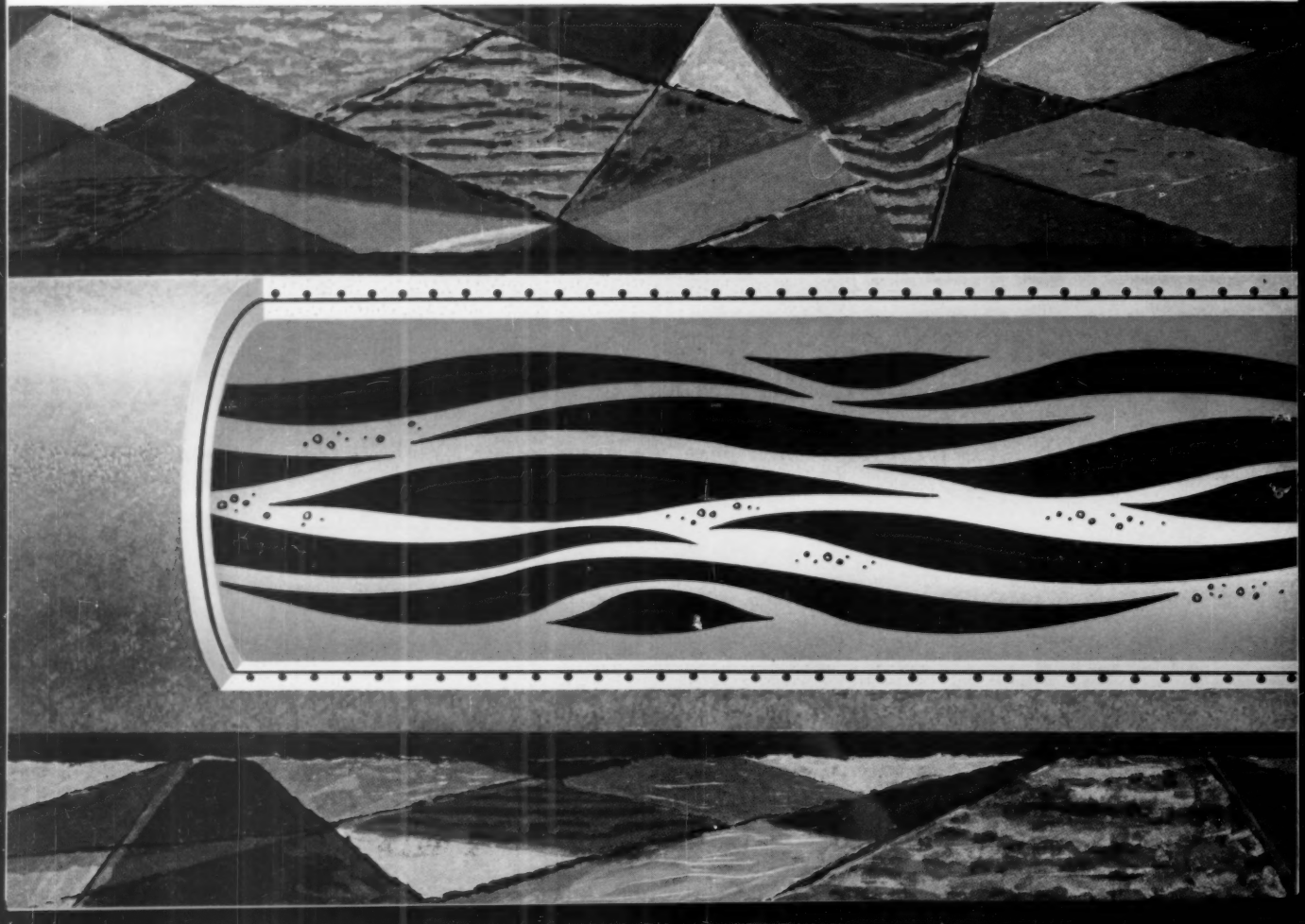
A Pipeline is for Moving Water

The long-term value of a pressure pipeline is in the predictable amount of water it will carry and continue to deliver. ■ American Concrete Cylinder Pipe excels in carrying capacity, and remains free of tuberculation. Test after test shows Hazen-Williams flow coefficients in excess of 140 can be expected in American Concrete Cylinder Pipe water supply and transmission lines. Generations of experience with high capacity pipelines have proved to users that these high flow capacities not only are maintained, but also tend to increase over years of service. ■ Take advantage of high flow characteristics, low pumping costs and other long-term economies of American Concrete Cylinder Pipe. See an American sales engineer when planning your next project.

American Pipe and Construction Co. • Los Angeles • San Diego • Hayward • Portland
Bogota, Colombia / **American Concrete Pipe Co. (subsidiary)** • Phoenix • Albuquerque

A MEMBER OF THE AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

American PIPE AND CONSTRUCTION CO.



CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 55.

Self-Priming Centrifugals

466 These powerful 3-inch pumps with 8,000-gph capacity allow you to match pumping speed with job requirements. They guarantee 28-foot suction lift, keep seepage at strainer level. An accessory idle control automatically idles engine when water level drops below strainer and brings engine up to full pumping speed as water level rises. For details, write HOMELITE, A DIVISION OF TEXTRON, INC., 106 RIVERDALE AVE., PORT CHESTER, N. Y.

Sanitary Water Coolers

467 Utility, repair and construction crews will welcome these rugged water coolers at the job site. They keep potable water cool, pure and clear. Descriptive literature shows they're available in 23 sizes and models, have easy-to-clean round inside bottom, and recessed spigot. Write IGLOO CORP., BOX 8227, MEMPHIS 4, TENN.

Dictating Machines

468 Are you a fire inspector always on the go? An official bogged down by a great volume of correspondence? Or in a department where many require dictating facilities? Then you'll be interested in obtaining literature on the Voicewriter line—there's a model just right for each dictation requirement. Write EDISON VOICEWRITER, DEPT. AC-6, WEST ORANGE, N. J.

School Traffic Signal Controller

469 *Bulletin* 2716 describes the PA-30 school traffic signal system with an electronic controller that provides simple timing adjustments. Control knobs are easily turned to desired settings (no changing of gears or setting of dial keys). The system is designed for operation at mid-block crossings. For details, write CROUSE-HINDS CO., SYRACUSE 1, N. Y.

Versatile Tractor Shovel

470 This 60.3-hp, 1-cubic-yard tractor shovel with its numerous attachments does virtually hundreds of jobs. It wastes no time in backing up during clean-up operations, gets full payloads fast, dumps over high trucks. For full facts, write MASSEY-FERGUSON INDUSTRIAL DIVISION, BLOCK 1000 S. WEST ST., WICHITA 18, KANS.

Engine-Driven Generator Sets

471 These balanced engine and generator combinations are designed to perform dependably in applications requiring a smooth steady flow of power for continuous, intermittent and stand-by duty. They're available in 50 to 800 kw capacities for gas, gasoline, normal or turbocharged diesel operation. For details on these Enginators, write WAUKESHA MOTOR CO., WAUKESHA, WIS.

Protects Metal Against Rust

472 This metal protection system stops rust, is durable, easy to apply, and colorful. It brings savings in time, money and metal to your plant, machinery, pipes, tanks, structural steel, equipment. For details, write RUST-OLEUM CORP., 2654 OAKTON ST., EVANSTON, ILL.; ask for the New Color Horizons System Catalog, free test sample, or results of a radioactive tracing study.

Speeds Spot Excavation

473 *Engineering Bulletin* PS751 gives full facts on the new 88-C Hydro-Clam, which can show you a low-cost way to speed spot excavation work, open bell holes or dig under sidewalks. It mounts easily on most tractors and digs to 12-foot depths. For this new bulletin, write PARSONS CO., SHAWNEE DEPT., NEWTON, IA.

Pneumatic Ejector Lift Stations

474 Municipal and consulting engineers concerned with sewage lifting problems will find *Catalog* 503 of considerable value. It contains design, construction, operation details and specifications for the factory-built Centri-Lift ejector station. For a copy, write PUBLIC WORKS DIV., SCHMIEG INDUSTRIES, INC., P.O. BOX 4701, DETROIT 34, MICH.

Better Reflectorized Traffic Signs

475 A free booklet offered by FLEX-O-LITE MFG. CORP., 8301 FLEX-O-LITE DRIVE, ST. LOUIS 23, MO., contains test and specification data, application procedures and other helpful information on reflective glass bead products that will help you achieve better reflectorized traffic signs for less.

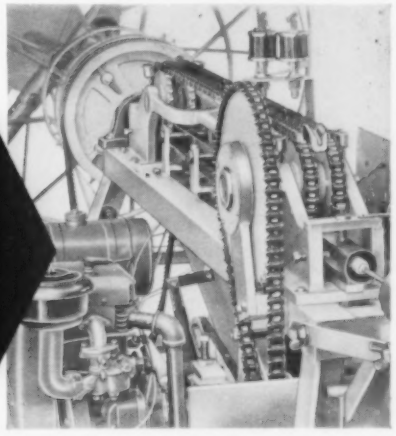
Sweeps Streets Clean

476 Salient design, construction and operating features of the 3-wheel, 3-cubic-yard Model 460 Wayne street sweeper, and its accessories, are discussed in a 12-page illustrated booklet, available from WAYNE MFG. CO., 2437 E. LEXINGTON AVE., POMONA, CALIF.

(See page 62 for more Bulletins)

FOR SEWER CLEANING

Positive NON-SLIP Rod Drive



The HEART *of the* Flexible "Automatic" SEWERODER

- Hardened Steel Drive Dogs, spaced between endless dual chains, provide controlled, non-slip power up to 4,000 lbs., no matter how greasy or muddy the rods may be.
- The Safety Overload Clutch protects pipe, rods, machine. Easily adjustable to relieve on predetermined overloads.
- The Footage Meter is synchronized with rod drive for pin-point tool location. Its accuracy eliminates costly guesswork in locating broken pipe.

Your "Flexible" representative will be glad to give you facts and figures or write for the SEWERODER Brochure.

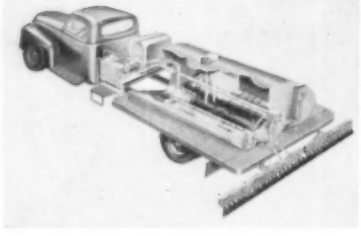
FLEXIBLE INC.

3786 DURANGO AVE., LOS ANGELES 34, CALIF.
1005 SPENCERVILLE ROAD, LIMA, OHIO
415 SOUTH ZANGS BLVD., DALLAS, TEXAS

Out of fumes' way!

with a Seaman-Gunnison distributor

Front-end control puts the Seaman-Gunnison operator where the air is pure and visibility unobstructed. He doesn't breathe in dangerous, noxious fumes, dust and dirt. He has a clear view of his work . . . can see where he's been and going . . . has instant communication with the truck driver. With engine mounted in front and burners in the rear, fire hazard is minimized. Vital working parts are kept clear of dirt and spray mist, reducing maintenance. Front mounting of pump and engine also gives greater stability, allowing faster, safer round trips on tank refills.

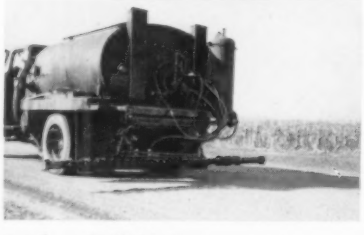


◀ No Burning...

Seaman-Gunnison's new principle of tank circulation prevents overheating, burning and "hot spots." The material is continuously flushed over the combustion area of the heater flues, maintaining uniform temperatures throughout the entire contents of the tank. Coke formation and subsequent nozzle clogging are virtually eliminated.

No Nozzle Drip ▶

Air-actuated controls open and close nozzles instantly without drip or dribble. During operation, rate of flow remains constant regardless of viscosity. Seaman-Gunnison distributors are available in truck-mounted models with capacities from 800 to 2,000 gallons and trailer-mounted models from 1,500 to 5,000 gallons.



Write for Free informative bulletins!

SEAMAN-GUNNISON DIVISION OF SEAMAN CORP. MILWAUKEE, WISC.—U.S.A.

P. O. Box 3025, Milwaukee 18, Wis.
Tel.: SUnset 1-8900

- Duo-Pactors
- Bituminous Distributors
- Tri-Pactor
- Street Flushers
- Impactor
- Utility 6-yd Scraper

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Eccentric Valves for Water, Sewage Plants

477 A new 8-page bulletin lists features of these valves, as well as materials, pressure ratings, dimensions, and accessories, and outlines the areas where the valves are extensively used. For a copy of *Bulletin* 110, write DEZURIK CORP., SARTELL, MINN.

Manual or Automatic Fluoridator

478 *Specification Sheet* 70D1100 presents a wall-mounted solution dispenser designed to smoothly mix and feed a fluoride solution to a point of application. Dimension drawing, flow diagram, materials of construction and principle of operation are shown. Write FISCHER & PORTER CO., 481 JACKSONVILLE DR., WARMINSTER, PA.

New Tandem Roller

479 This 4-6 ton tandem roller works within ¾-inch of building and foundation lines, has a turning radius of only 14½ feet and a low center of gravity. It has just been announced and is fully described in literature available from GENERAL ENGINES CO., INC., U. S. ROUTE 130, THOROFARE, N. J.

Preventive Weed Control

480 A round-the-clock calendar weed control program based on use of both pre- and post-emergence herbicides is the subject of a 12-page booklet, which includes illustrations and names of 93 types of common weeds. For a copy, write GEIGY AGRICULTURAL CHEMICALS, SAW MILL RIVER RD., ARDSLEY, N. Y.

Keeps Water Cool and Pure

481 With a Horton water cooler on the job, your utility and construction crews will stay on the job, for these units keep drinking water pure and cool. They are available in a wide range of sizes and in standard and heavy-duty models. For descriptive literature, write HORTON EQUIPMENT CO., P. O. BOX 2611, HOUSTON 1, TEXAS.

What's New in Fence Material?

482 It's easy enough to find out what's new in Anchor chain link fence. Just request the current catalog, and you'll be brought up to date on materials, quality, construction, costs, maintenance, etc. Write ANCHOR FENCE, 6564 EASTERN AVE., BALTIMORE 24, MD.

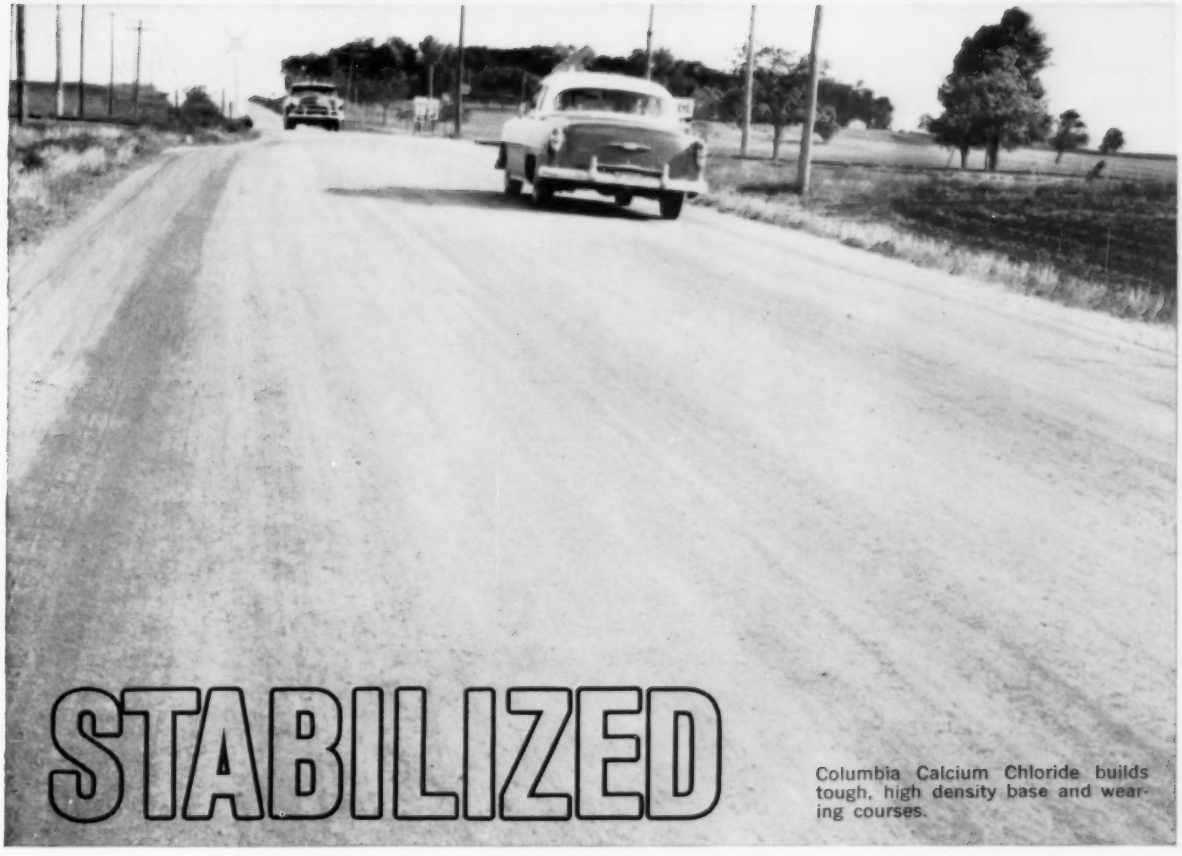
Self-Priming Centrifugal Pump

483 Maintenance crews of city sanitation departments will find a new and versatile pump, called Handy Pump, a valuable piece of equipment for handling all sorts of drainage problems. For descriptive literature giving details, write THE GORMAN-RUPP CO., 305 BOWMAN ST., MANSFIELD, OHIO.

Diesel Generating Sets

484 KATOLIGHT CORP. OF MANKATO, MINN., announces the availability of a listing and packet of photographs of interesting applications on their larger sizes of gasoline, natural gas and diesel installations. The company manufactures smaller portable gasoline models (500 watts—150 kw) and larger models available through 750 kw.

(See page 64 for more Bulletins)



Columbia Calcium Chloride builds tough, high density base and wearing courses.

with Columbia Calcium Chloride

What makes a good road? The answer starts with a durable, dense-graded aggregate base stabilized with Columbia Calcium Chloride. The addition of Columbia Calcium Chloride gives these significant effects on stability:

1. UNIFORM MOISTURE CONTROL DURING COMPACTION — Even during periods of low humidity and high temperature, Columbia Calcium Chloride resists evaporation and permits maintenance of optimum moisture during compaction, thus giving higher and more uniform density.

2. LESS COMPACTIVE EFFORT REQUIRED — Tests show that by using Columbia Calcium Chloride, greater density can be obtained with one-half the number of rollings.

3. LESS BINDER REQUIRED — Reduces the percentage of binder soil required, an important consideration in controlling frost damage.

4. CONTROLLED CURING FOR INCREASED STABILITY — Columbia Calcium Chloride assures high structural stability because it controls drying rate during compaction and curing periods.

5. DUST FREE SURFACE — Keeps road firm during and after construction, establishes a smooth-riding, safe-wearing surface.

6. FROST PROTECTION — Effectively reduces detrimental frost action.

7. ADAPTABLE TO BOTH PLANT AND ROAD MIXES

Put Columbia Calcium Chloride to work on your roads. It adds extra miles of trouble-free performance in bases and wearing courses. For more information, contact our nearest District Office or write our Pittsburgh address.

You'll like doing business with Columbia-Southern

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Co. • One Gateway Center • Pittsburgh 22, Pa.
DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco
IN CANADA: Standard Chemical Limited

Send a CUSHMAN 780 TRUCKSTER® instead of a truck!

Many municipalities do ... and slash costs on scores of jobs!

Figuring the small initial investment, the operating cost of less than a penny per mile, the minimum maintenance expense, and the savings on insurance ... the 780 Truckster delivers the greatest economy in any light hauling application.

Capable of carrying an 800 pound payload with ease, the 780 Truckster features:

- *New formed channel, automotive style chassis*
- *Bigger, stronger pick-up box*
- *Dependable Cushman Husky 4-cycle engine*
- *Constant mesh transmission*
- *Hydraulic internal expanding brakes*
- *Optional fiber glass and steel cab with wrap-around windshield*
- *Choice of body styles to fit the job*

Hauling trash in Los Angeles

Water meter service in Compton, Calif.

Golf course maintenance in Wichita, Kan.

Street cleaning in Hawthorne, Calif.

Ask your dealer for a demonstration or write for information

CUSHMAN MOTORS

946 No. 21st, Lincoln, Nebraska

A subsidiary of Outboard Marine Corporation, maker of Johnson and Evinrude outboard motors

Please send information on 780 Truckster.

NAME _____

YOU NEED These catalogs

Write to address given or circle corresponding number on free post card on page 55.

Service-Utility Truck Bodies

485 INTERNATIONAL HARVESTER CO., CONSUMER RELATIONS DEPT., 180 N. MICHIGAN AVE., CHICAGO 1, ILL., announces seven new service-utility bodies designed specifically for International light-duty trucks, making them time-saving workshops on wheels. They are offered in four conventional and three completely-enclosed models.

Street Signs for Municipalities

486 A full-line catalog describes and gives specifications and prices for signs, blanks, accessories, hardware, posts and bases for street name and traffic and warning signs. It can be obtained by writing to MUNICIPAL STREET SIGN CO., INC., 128-20 14TH AVE., COLLEGE POINT, LONG ISLAND, N. Y.

Luminaire Adapter

487 This adapter converts the Form 110 luminaire from a straight prong to a twist lock receptacle conforming to EEI-NEMA standards in less than a minute. It is completely pre-wired, and is but one item in an extensive line of outdoor lighting control equipment. For details, write SUN SWITCH DIVISION, RIPLEY COMPANY, INC., MIDDLETOWN, CONN.

Pipe Cutting Made Easy

488 Here's a pipe cutting machine that offers the safety and convenience of remote operation plus a clean cut in just seconds after it's installed. It can be used to cut water main, soil pipe, terra cotta or tile and asbestos cement pressure pipe. For full facts, on the heavy-duty Wheeler hydraulic, write THE WHEELER MFG. CORP., P. O. BOX 688, ASHTABULA, OHIO.

Extra-Duty Mowers

489 These mowers are designed to help you reduce the cost of cutting grass. The Ram, a high wheel rotary, is particularly suited for those hard-to-get at mowing jobs. The Mow-Mobile, with flexible cutting head with multiple discs, cuts clean in heavy growth, over roughest terrain. For literature, write JACOBSEN MFG. CO., DEPT. AC6, RACINE, WIS.

Free Booklet on Drilling Methods

490 If your work involves angular, horizontal or vertical drilling you'll finding this *Engineering Bulletin* of value. It describes the Ka-Mo drilling method and equipment, covers drill selection, boring capacities, and latest developments in drilling techniques. Write KWIK-MIX CO., KA-MO TOOLS DEPT., PORT WASHINGTON, WIS.

New Sewage Treatment Bulletin

491 Six-page *Bulletin* 315-6A1 introduces the new Rex circular scraper collector and scum remover, first in a new line of scraper and skimmer mechanisms designed to meet specific requirements of municipal and industrial treatment plants. For a copy, write CHAIN BELT CO., SALES PROMOTION DEPT., MILWAUKEE 1, WIS.

(See page 66 for more Bulletins)

Pipe extruded by Evanite Plastic Company, Carrollton, Ohio

500 feet of **KRALASTIC** pipe for drinking water installed in one hour

A new water main installed for the village of Carrollton, Ohio, is made of KRALASTIC®, the original ABS plastic pipe. A 500-foot length of pipe was installed in a mere hour because its 30-foot sections weigh only 65 pounds each, compared to the 360-pound weight of cast-iron pipe. The local board of Carrollton, Ohio, has also approved KRALASTIC pipe for water service lines, interior household plumbing, including both hot- and cold-water distribution lines, and rural pump settings and water systems. KRALASTIC *will not rust, is immune to corrosion.* KRALASTIC is approved by National Sanitation Foundation for potable water.

Specify KRALASTIC pipe to your local supplier. Write, wire or phone us if unable to locate immediate source of supply.

United States Rubber
Naugatuck Chemical Division
DEPT. 644K ELM STREET
NAUGATUCK, CONNECTICUT

KRALASTIC RUBBER-RESINS • **MARVINOL** VINYLS • **VIBRIN** POLYESTERS

Akron · Boston · Chicago · Gastonia · Los Angeles · Memphis · New York · Phila. · CANADA: Naugatuck Chemicals · Elmira, Ont. · Cable: Rubexport, N.Y.

YOUR SPRING BOARD TO CAREFREE, PROFITABLE CHECKING

the heart of LOCKER CHECKING

WATCH PROFITS RISE WITH
AMERICAN'S
COIN-LOK* Plan

- Offers maximum checking convenience and security.
- Provides automatic self-service on "pay" or "refund" basis.
- Eliminates costly labor and supervision.
- Can be applied to existing lockers.
- You *buy* — or *lease* locks with no lock maintenance to worry about, no replacement costs of lost keys or broken locks. American takes over the whole job.
- Over 50 locker sizes available in a wide choice of colors.

*T. M. — American Locker Co., Inc.

COMPARE COIN LOCKS — COMPARE SPECIFICATIONS
COMPARE PRICES

AMERICAN LOCKER COMPANY, INC.
Dept. 46, 211 Congress Street, Boston, Mass.
OLDEST AND LARGEST COIN LOCK MANUFACTURER

COIN LOK* LOCKER CHECKING SYSTEMS

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Swimming Pool Care

492 A handy swimming pool chart and 20-page booklet containing information on various phases of pool care is being offered by PENNSALT CHEMICALS CORP., B-K DEPT., 3 PENN CENTER, PHILADELPHIA 2, PA. The chart gives rules for safety around the pool, tips on pool area sanitation, and methods of estimating pool capacity.

Remote-Reading, Electrical Flow Meters

493 . . . for all types of liquids and gases at line pressures to 5000 psi are described in a new bulletin issued by REPUBLIC FLOW METERS CO., subsidiary of ROCKWELL MFG. CO., 2240 DIVERSEY PKWY., CHICAGO 47, ILL. *Bulletin* No. 59-5 also includes principles and engineering features.

Rugged Air Compressor

494 If you are seeking an efficient air compressor that's low in initial cost, economical to operate, easy to maintain, and able to deliver 125 cfm at 1165 rpm, you'll want to send for descriptive literature to GORDON SMITH & COMPANY, INC., BOWLING GREEN, KY.

Casebook for Surveyors

495 If you're an engineer or surveyor, you can obtain a free copy of the Zeiss Level Casebook, which contains a collection of case histories from around the world and is full of worthwhile surveying tips and techniques. It is available from KEUFFEL & ESSER CO., DEPT. AC-6, HOBOKEN, N. J.

Packaged Pump Stations

496 These units are available in 100 to 2,000 gpm capacities, and are shipped complete, ready to install. *Bulletin* No. PS-60R describes them and their new basic design advances. For a copy, write TEX-VIT SUPPLY CO., MFG. DIVISION, DEPT. M60, P. O. BOX 117, MINERAL WELLS, TEXAS.

A New Cat Tractor

497 *Form* 33550, a 12-page booklet just published by CATERPILLAR TRACTOR CO., PEORIA, ILL., gives full facts on the new D4 Series C tractor, which incorporates a new diesel engine, a lifetime lubricated undercarriage, and other important new developments that provide greater power, better performance and economy.

Steel Waste Receptacles

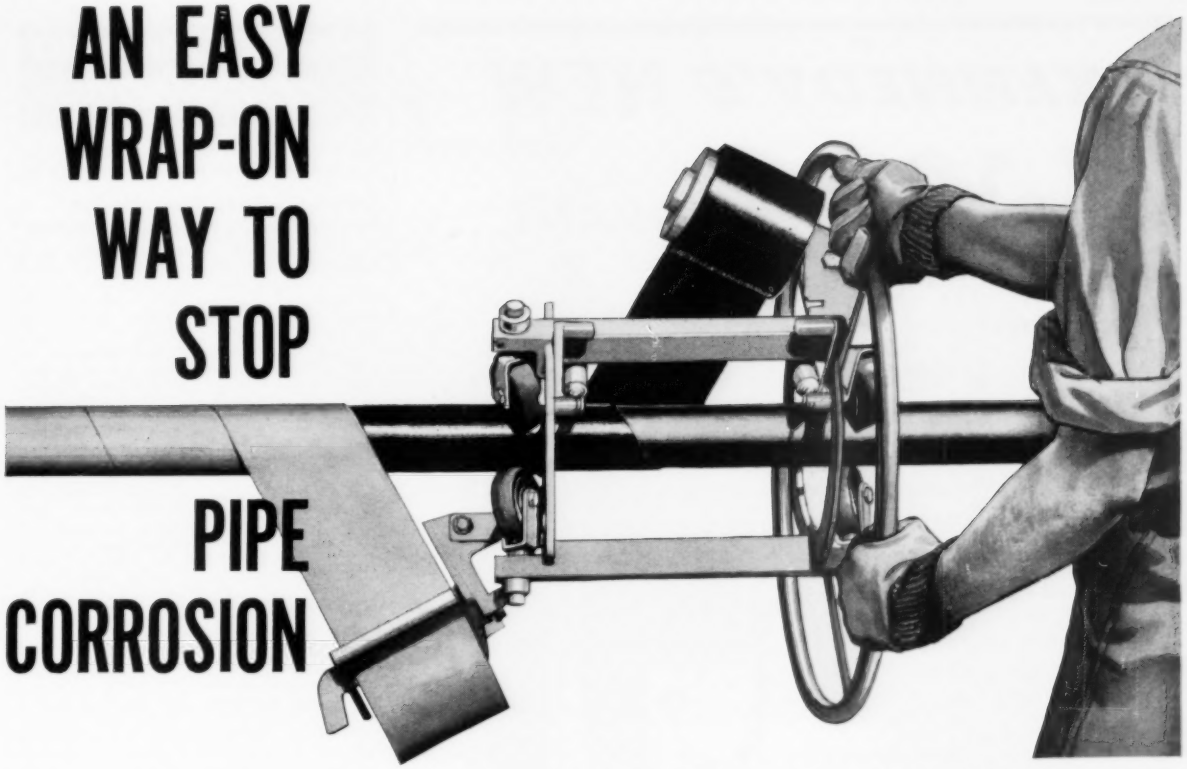
498 The latest catalog from UNITED METAL CABINET CORP., 14TH & LAUREL STS., POTTSVILLE, PA., illustrates the company's entire line of swing top and round top waste receptacles, for indoor and outdoor use and for classified materials.

Tractor Shovels

499 Power, speed and handling characteristics of six "Michigan" line tractor shovels are described in new CMD *Bulletin* 3000, published by CONSTRUCTION MACHINERY DIV., CLARK EQUIPMENT CO., PIPESTONE PLANT, BENTON HARBOR, MICH. The booklet is divided into convenient reference sections and features a variety of job applications.

(See page 68 for more Bulletins)

AN EASY WRAP-ON WAY TO STOP PIPE CORROSION



The new CORR-PREV Pipe Coating Team comes in easy to handle tape form. It goes on pipe faster and lasts longer than corrosion-proof paints. It's cleaner and simpler to apply, too, than hot tar coats. And most important, this new CORR-PREV Team offers all the cost-cutting, pipe-saving advantages of *polyethylene* tape.

With CHASEWRAP Abrasion-Resistant Overwrap and Chasekote polyethylene tape, you get the easiest and best pipe protection at *lowest applied cost!* There's no heating, drying, clean-up or shut-down time. Each roll is factory-uniform in thickness and quality. And all coating materials — including rental of high-speed applicators — are available from one reliable source. Want samples? Specs? Prices? Write **CHASE & SONS, INC., 26 Spruce St., North Quincy, Mass.**

Chasekote*

Pressure-Sensitive Polyethylene Tape has an extra-heavy adhesive mass that clings to clean pipe on contact . . . makes a perfect, permanent bond that rustproofs, waterproofs and insulates pipe against all types of corrosion.

Chasewrap*

Proctective Overwrap is a tough, wrinkle-free outerwrap that shields against abrasion, wear, and physical damage to the tape. Wraps simultaneously with the tape. Superior to rag and felt wraps, yet far lower in cost.

**Trade name of Chase & Sons, Inc., long-famous for protective and insulating tapes for electrical wire and cable*

Refineries & Gathering Systems

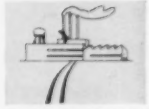
Public Building Lines

Oil & Gas Transmission Lines

(CORR-PREV) DIVISION

Highway and Airport Conduit & Pipe

Utility Distribution Systems



Chemical & Industrial Plant Piping

FOR YOUR ELECTRICAL INSULATION PROBLEMS SPECIFY CHASE FRICTION, PLASTIC, RUBBER, NEOPRENE AND BUTYL TAPES

KENNEDY'S NEW

K-10 FIRE HYDRANT...

Combines lower installation and maintenance costs with maximum protection

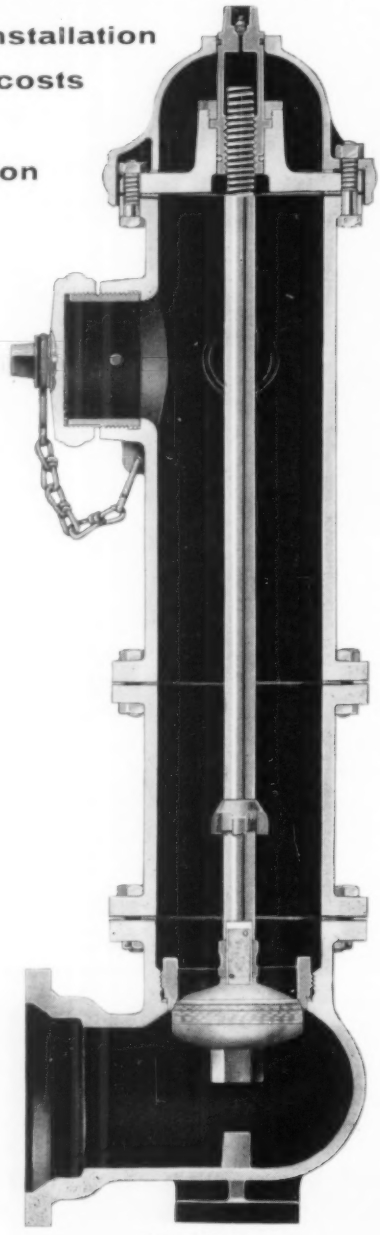
The new KENNEDY K-10 Hydrant features "O" Ring seals, a weather seal and a pressure seal. These seals eliminate packing and assure clean, absolute protection of the inner working parts. "O" Rings are permanently installed and require no adjustment.

The K-10 contains an absolute minimum number of working parts, all of which can be removed for maintenance or repair within excavation. Ruggedly constructed, the K-10 Hydrant also features straight line operation and reaches a new high in working efficiency with smooth, large area internal passageways.

Large stems and stem nuts facilitate operation and provide extra strength and safety. Nozzle rotation can be made by utilizing the bolted joint and the spool.

- *Before you specify, get all the hydrant facts from KENNEDY. Write for Bulletin 591.*

The K-10 Fire Hydrant conforms to A.W.W.A. specifications and is available in three sizes, 4, 4½, and 5 inch and in a variety of pipe end connections.



KENNEDY'S NEW
K-10 FIRE HYDRANT

KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK

• OFFICES AND WAREHOUSES IN PRINCIPAL CITIES

DUCTILE IRON VALVES • CAST IRON VALVES • BRONZE VALVES • INDICATOR POSTS • FIRE HYDRANTS

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Solids-Contact Reactors for Water Clarifying and Softening

500 A revised 20-page bulletin, Pub. 5001-C, illustrates various types of reactors and their basic design considerations, explains the principle of radial horizontal (rather than upflow) as an aid to complete settling of fine precipitates and clarifying, and contains information on chemical feeds and auxiliary equipment. Write COCHRANE CORP., 17TH ST., BELOW ALLEGHENY AVE., PHILADELPHIA 32, PA.

Aluminum Diving Board

501 Here's a diving board that will be an asset to any community swimming pool. It features rugged aircraft girder construction, "lifetime" durability, and turns in superior performance. For full facts on the Jim Patterson aluminum diving board, write AMERICAN PLAYGROUND DEVICE CO., ANDERSON, IND.

Vacuumized Street Sweeper

502 A 6-page illustrated bulletin outlines advantages, shows step by step operation and pictures typical users of the Tennant Model 100 vaccumized street sweeper, used for sweeping streets, parking lots, airport runways etc. and able to sweep a 7'4" path. Write G. H. TENNANT CO., 751 N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

Warns Drivers of Street and Highway Hazards

503 A 3-way hazard-warning system that signals danger ahead, locates the hazard area, and illuminates and safely guides driver around the hazard, is assured most efficient application when used in conjunction with the Hazard Warning Planner ($1 each). For details, write R. E. DIETZ CO., DEPT. 96, 225 WILKINSON ST., SYRACUSE 1, N. Y.

Plastic Pipe for Water Service Lines

504 A descriptive folder, available from CRESCENT PLASTICS, INC., DEPT. C-0, 955 DIAMOND AVE., EVANSVILLE 7, IND., gives facts on plastic pipe that costs 50-75% less to install than metal pipe, is approved for potable water use, and is highly resistant to corrosion.

It Hauls Trash in Los Angeles,

505 . . . and aids water meter readers in Compton, Calif., helps with golf course maintenance in Wichita, Kans., assists with street cleaning operations in Hawthorne, Calif. *It* is the 780 Truckster, a lightweight, 3-wheel light hauling vehicle that operates at less than a penny a mile. For details, write CUSHMAN MOTORS, 946 NO. 21ST, LINCOLN, NEBR.

Reduce Installation Costs with Longer Length C.I. Pipe

506 Griffin-20 is a trademark that applies to a complete line of cast iron pressure pipe, cast by the DeLavaud process in 20-foot lengths, in 4-inch to 12-inch diameter size range, and available with a complete selection of pipe joints. "Introducing Griffin Pipe" will give you the facts. Write GRIFFIN PIPE DIVISION, GRIFFIN WHEEL CO., COUNCIL BLUFFS, IA.

WALD *covers the* BIG COUNTRY

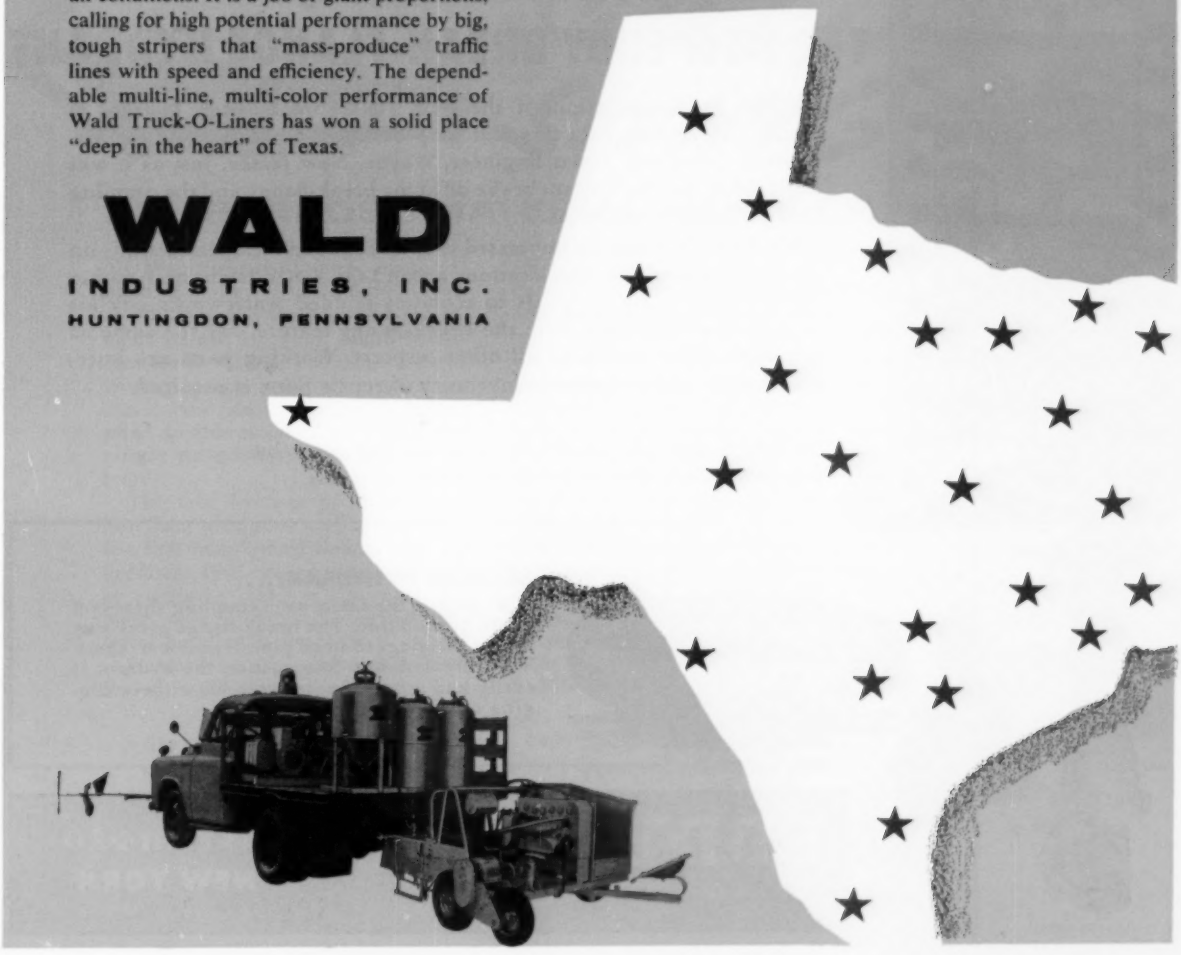
Each place starred on the state of Texas is the home base for at least one Wald Truck-O-Liner, the "big fellow" famous for versatility, speed and economy in BIG pavement striping operations. Corralled in full assembly they represent the *world's largest fleet of truck-mounted marking machines*, an imposing testimonial to Wald's ability for consistently producing a better machine, designed to fulfill the most exacting requirements.

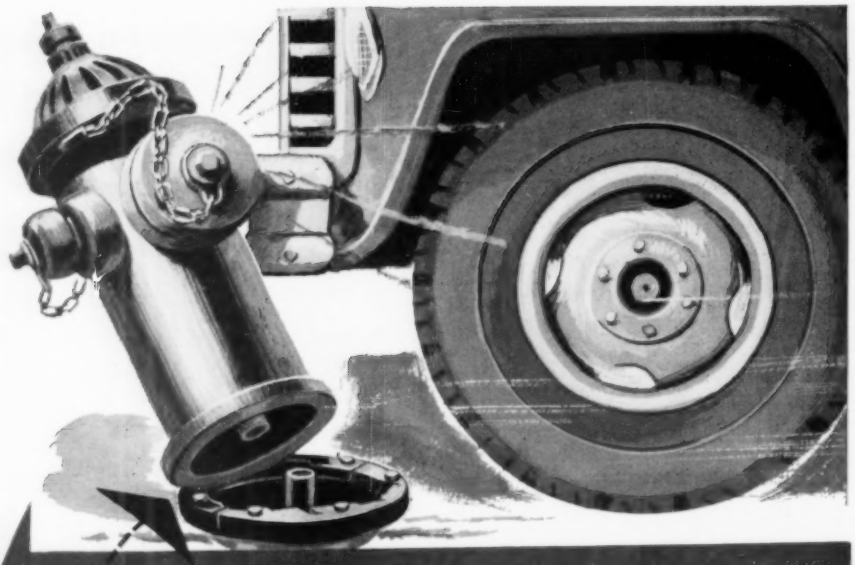
It takes a heap of highway to lace together the far-flung communities of the great state of Texas . . . total pavement mileage would make a "space travel" figure of endless stretches to be safety marked for 24-hour guidance under all conditions. It is a job of giant proportions, calling for high potential performance by big, tough stripers that "mass-produce" traffic lines with speed and efficiency. The dependable multi-line, multi-color performance of Wald Truck-O-Liners has won a solid place "deep in the heart" of Texas.

WALD

INDUSTRIES, INC.

HUNTINGDON, PENNSYLVANIA





THIS DEMONSTRATION

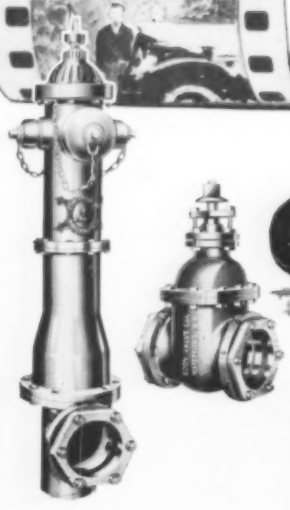
...proved the advantages of

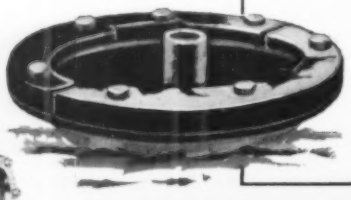
THE NEW EDDY BREAK-FLANGE HYDRANT

• Clean breaking action of the new EDDY break-flange hydrant is clearly demonstrated in this film strip of a test made recently for Mr. Herbert Campbell, Town Engineer, Wayne, New Jersey. Just as it was designed to do, the hydrant broke off at the break-flange and the coupling sheared at the weak point.

Mr. Campbell was so impressed that he changed the specifications on the spot...wrote new specifications around the EDDY Hydrant. Another EDDY feature which appeals to economy-minded waterworks officials is that these hydrants, with the break-flange feature, are the same as standard EDDY models in all other respects. Working parts are interchangeable and no separate inventory of repair parts is required.

We'll be glad to help you arrange a similar demonstration.
It pays to standardize on EDDY hydrants and valves.





NO HARM TO HYDRANT...

As shown, the safety stem coupling shears off at the ground line. The break-flange gives way without damage to stand pipe or nozzle sections. With break-flange construction the hydrant is easily and economically replaced without digging or costly repairs.

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD NEW YORK

REPLACES 4 TO 7 MACHINES

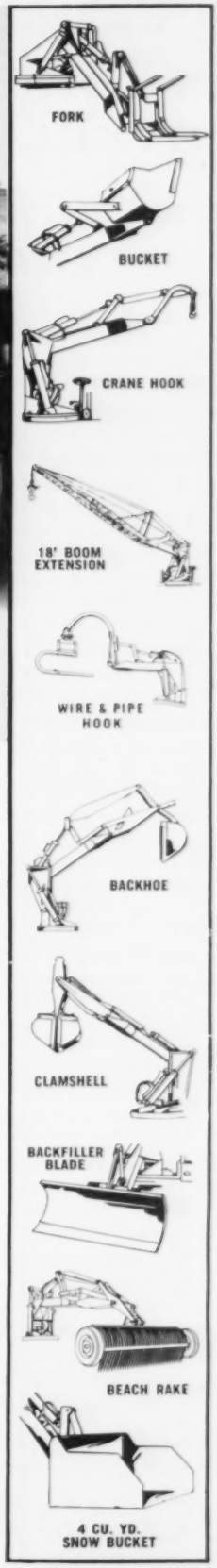
180° SPEED SWING

ALL-PURPOSE MATERIAL HANDLER

NOW—the *all-purpose* material handler that gives you one-man crew advantages. It's the soundest investment of all for your requirements because it does *all* the jobs . . . earns its way on one application after another. And its usefulness is multiplied to the extent that it replaces single-purpose, specialized equipment!

The best features of all material handling machines are combined in the Pettibone Speed Swing, plus the *exclusive* 180° boom swing—90° left or right—to make it the most efficient, *most versatile* all-purpose material handler in the field.

Example: shown above, the Speed Swing backfills a sewer trench. The 180° boom swing permits it to work parallel to the trench in a confined area with no gee-hawing or maneuvering of the machine. Traffic is not disrupted . . . can move safely in other lanes. Other applications are numerous: park and street maintenance, tree removal, culvert installations, loading and spreading materials with high speed operation, loading out old curbing and sidewalks, snow removal—to mention a few. And all on a cost-cutting operation basis. Shown at right, 10 quickly interchangeable attachments (by changing *only* 3 pins) that make the Speed Swing the *most adaptable*, *most versatile* all-purpose material handler of all!



Get the facts on how the Pettibone 180° Speed Swing can reduce your equipment investment, as well as your maintenance costs.

PETTIBONE MULLIKEN CORPORATION

4700 W. DIVISION ST. CHICAGO 51, ILLINOIS

SPaulding 2-9300

On hundreds of Skylines...

HORTON® ELEVATED STEEL WATER TANKS

. . . products of CB&I

Craftsmanship in Steel

Go North . . . East . . . South . . . West . . . you'll see Horton Elevated Steel Water Tanks on the skylines of America's *most progressive* cities. Landmarks of municipal progress, these structures combine beauty and prestige with efficient water system planning.

Horton tanks are designed to satisfy the increased water requirements of growing communities. They provide dependable gravity pressure water storage and assure these benefits:

- Reduced pressure variations
- Reduced pumping cost
- Increased water pressure
- Fire and emergency reserves
- Welded construction providing trouble-free service life with a minimum of maintenance
- All CB&I structures are built to AWWA standards

The specific answer to your water storage requirements can be found in the wide range of capacities and designs of modern elevated structures offered by CB&I:

WATERSPHERES® are graceful and contemporary in design. They provide maximum storage capacity in a functional, easy-to-paint and maintain structure. They are available in capacities from 25,000 to 250,000 gallons.

WATERSPHEROIDS® are big brothers to Waterspheres, differing only in size and shape. Waterspheroids range in capacity from 200,000 to 500,000 gallons. Both structures are designed to allow use of the base of the column as a pump or storage house . . . eliminating the need and expense for separate buildings. *Write for Watersphere and Waterspheroid Bulletin.*

SPHEROIDAL TANKS are available in several variations of the basic design to meet individual requirements. Capacities range from 200,000 to 3,000,000 gallons. They can be built with a large central riser in smooth or a fluted design; or the central portion can be supported on an inner circle of columns. *Write for Bulletin on Horton Elevated Tanks of Large Capacity.*

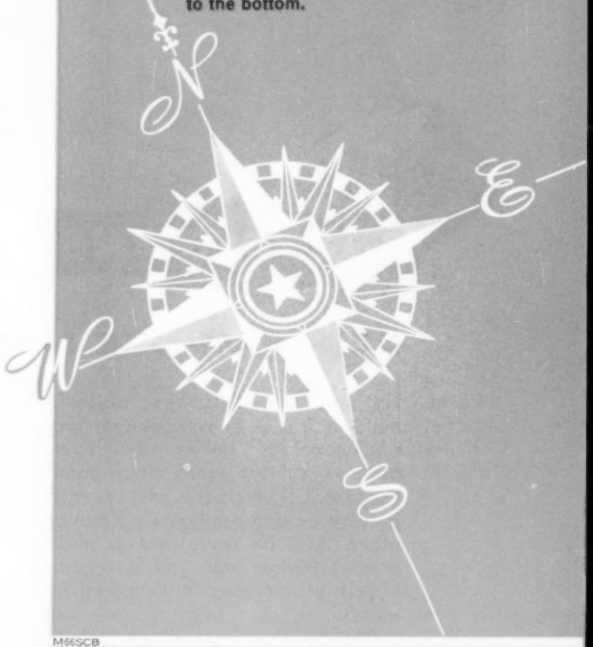
ELLIPSOIDAL-BOTTOM TANKS provide relatively large diameter and shallow depth. They have pleasing proportions and reduce the variation in pressure as water is used from them.

RADIAL-CONE TANKS provide the advantages of elevated storage in a tank of large capacity with a low range in head. They have smooth lines, are easy to maintain and are available in capacities up to 3,000,000 gallons. Can be furnished with or without a balcony.

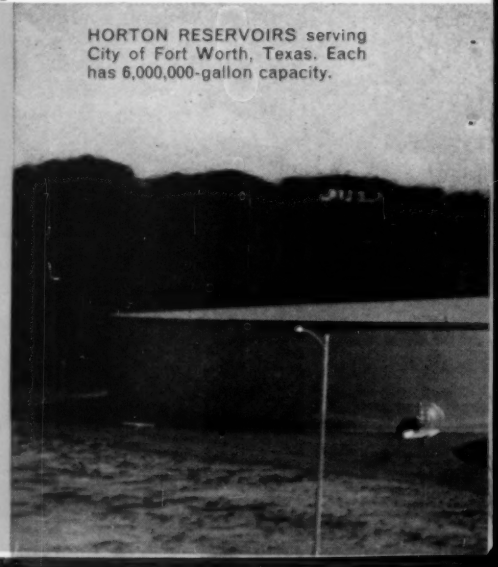
STANDPIPES fulfill the water storage needs of many communities. Horton structures are particularly adaptable to special decorative treatment if desired. (See photo.)

STEEL RESERVOIRS provide gravity pressure where natural elevations are available or where large storage capacity is needed at ground level. They can be designed to meet *any size* or capacity requirements. A variety of roof types can be furnished. Horton *Steel* tanks will not crack or leak due to uneven settlement. Routine preventive maintenance will provide long service life. *Write for a copy of Horton Steel Reservoirs and Standpipes.*

WATERSPHERE at Griffith, Indiana has 200,000-gallon capacity; is 98 ft. to the bottom.



M665CB



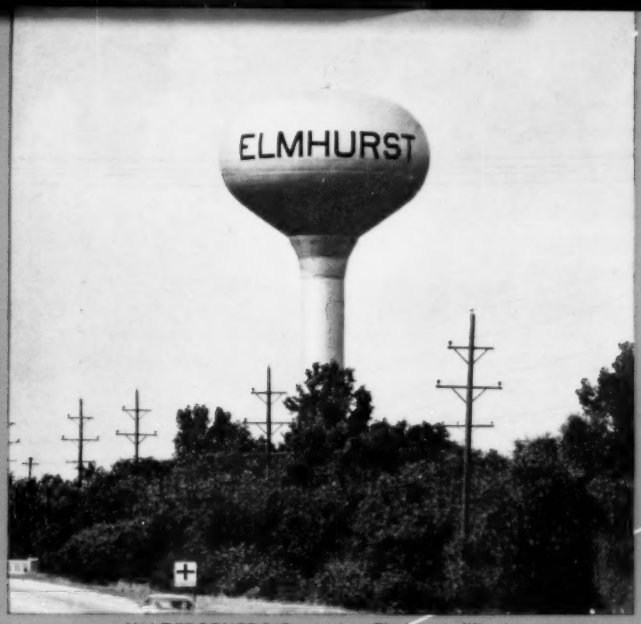
HORTON RESERVOIRS serving City of Fort Worth, Texas. Each has 6,000,000-gallon capacity.

CHICAGO BRIDGE & IRON COMPANY

CB&I

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

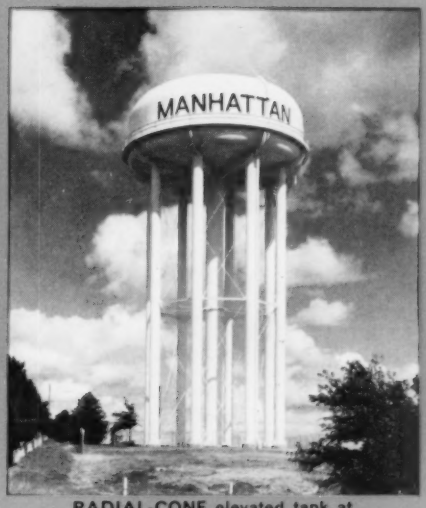
OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD



WATERSPHEROID serving Elmhurst, Illinois has 500,000-gallon capacity; is 100 ft. to bottom.

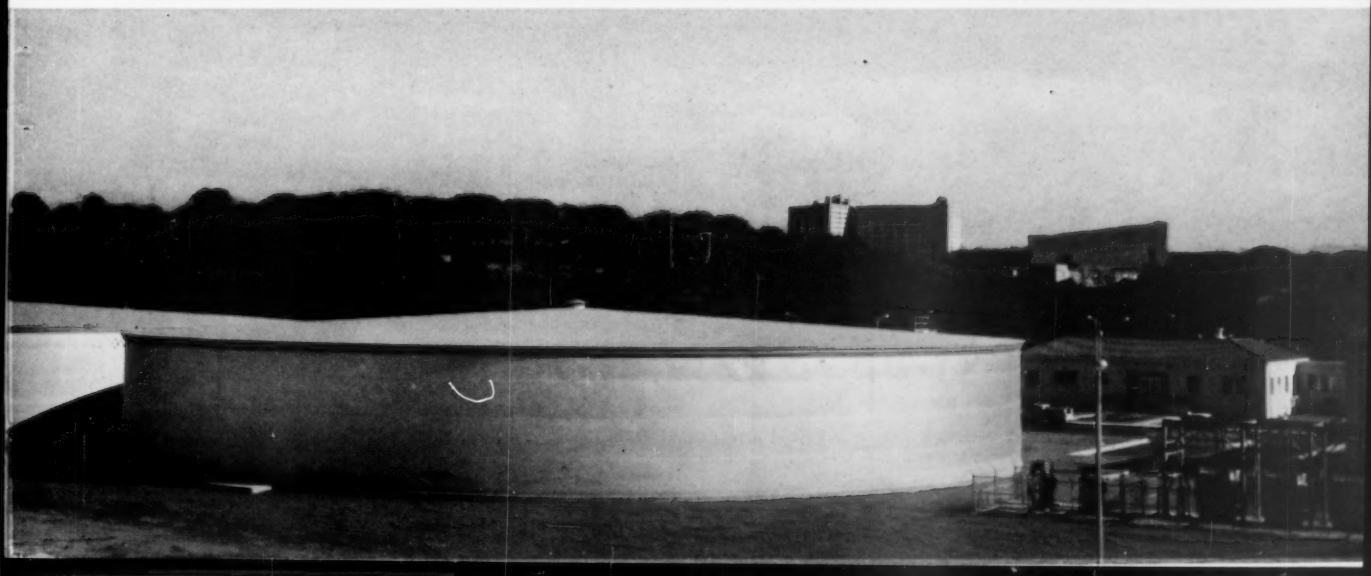
SPHEROIDAL elevated tank at Wheaton, Illinois is 130 ft. to bottom; has 1,500,000-gallon capacity.

ELLIPSOIDAL-BOTTOM tank at Bremen, Indiana has 300,000-gallon capacity.



RADIAL-CONE elevated tank at Manhattan, Kansas has capacity of 500,000 gallons.

ORNAMENTAL STANDPIPE at Clearwater, Florida has capacity of 1,000,000 gallons.



You Name the Job . . .

No matter what it is, you have the answer with the new Homelite "300" Pumps. Three models are available . . . the quiet, slow speed model for economical, high capacity pumping jobs . . . the standard-speed, fast-priming model for jobs requiring higher discharge pressures . . . the high-volume pressure model for jetting, fire-fighting, irrigation and other jobs requiring high discharge pressures. Each model weighs only 103 pounds. Each pumps 300 gallons per minute . . . 18,000 G.P.H. Fast self-priming, up to 28 ft. above water level. And as an extra bonus, each of the new "300's" has a new ceramic-coated seal that greatly reduces maintenance costs.

See it in action. You'll want to put it in action fast.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Now Available!

NEW AUTOMATIC IDLE CONTROL

New Homelite idle control accessory automatically idles engine when water level drops below strainer . . . brings engine up to full pumping speed as water level rises. Because pump works only when needed, you save fuel, maintenance and labor costs. Ask for a demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 106 RIVERDALE AVE., PORT CHESTER, N. Y.

ALL-NEW PAYLOADER®

The MODEL H-30 with 4-WHEEL DRIVE is a natural for city and town work. In spite of its compact size and modest price, it boasts the latest improvements and features of larger "PAYLOADER" units that give it performance, safety and operating advantages not found in any comparable machine:

Four-Wheel Brakes: Powerful hydraulic type, and sealed to keep out dust and dirt.

Full Power-Shift Transmission plus torque converter: Three speed ranges in each direction. All shifts in either direction made with fingertip effort, "on-the-go". No foot clutching.

Visibility and Safety: New slope-down front end lets operator see bucket-loading action. Fixed ladder and hand rails let operator get in and out safely.

Closed Hydraulic System: Oil reservoir is sealed and pressurized to keep out air-borne dust and dirt. Includes cartridge-type oil filter and fine mesh strainer.

Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of transmission and torque-converter oil.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged.

Maximum Accessibility: Fuel tank and transmission can be checked and filled from ground level. Easy access to battery, engine and other necessary points.

Contact your nearby Hough Distributor or write for more information and a demonstration of this H-30 or any other "PAYLOADER" model from 2,000 to 12,000-lb. operating capacity.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.

- **OPERATING CAPACITY 3,000 LBS.** — 1-cu. yd. bucket.
- **77½-H.P. GAS ENGINE** has 17% more H.P. than next most powerful in its class.
- **DUMPING CLEARANCE** of 8'4" is 4" more than any in its class.
- **DUMPING REACH** of 29" ahead of tires is a foot more than any in its class.
- **FOUR-WHEEL BRAKES** are exclusive on the H-30 in its class.
- **SAFETY BOOM ARMS**—with all moving parts ahead of the operator — is another H-30 exclusive.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.

☐ Send data on new H-30 "PAYLOADER"
☐ Send data on other models and attachments

Name _____
Title _____
Gov't. Unit _____
Street _____
City _____ State _____

6-B-5

Here's proof you need never turn off new General Electric TPL two-way radio

Standby battery drain on General Electric's new Transistorized Progress Line is so low (less than 40 milliamperes as shown in above test) you need never turn off the TPL unit in your vehicle.

Only four tubes in a TPL transmitter mean you install no special generator, use less gas, require fewer engine jobs. And TPL is the smallest commercial two-way mobile radio you can buy today.

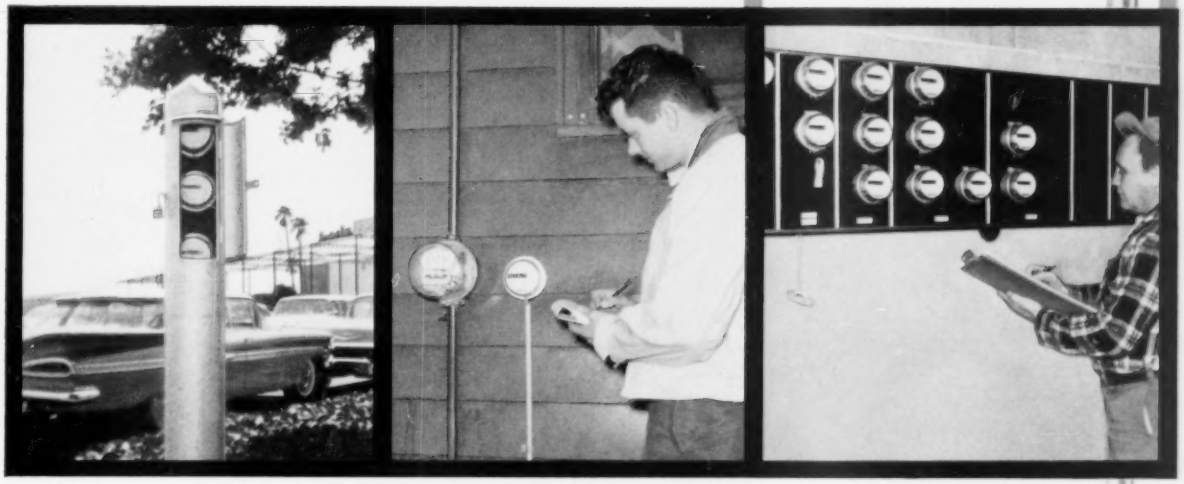
You'll find TPL units today across the nation in such places as Portsmouth, Virginia; Breckenridge Hills, Missouri; Fayetteville, Arkansas; Rockport, Indiana; Ocala, Florida; Graham County, Arizona; Seekonk, Massachusetts.

TPL is already saving big money for many municipalities. It can do the same for yours. Get all the facts by writing General Electric Company, Communication Products Dept. 160, Mountain View Road, Lynchburg, Virginia.

Water District Supt. Elwood Smith (left) of Seekonk, Mass. and Chief of Police Charles Gordan of Breckenridge Hills, Missouri both find they must leave the radio on standby when away from their vehicles. General Electric TPL makes this possible without idling the engine or running down the battery.

GENERAL ELECTRIC

Badger *Read-o-Matic's** cost-cutting story is big as all outdoors

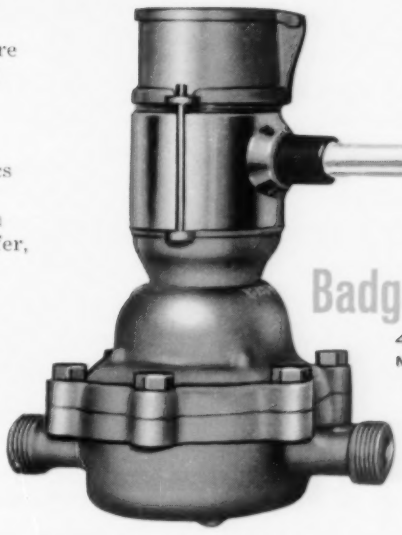


*Pat. applied for in U.S.A. and foreign countries.

All over the country water departments are cutting meter-reading costs and increasing efficiency with Badger Read-o-Matic outdoor meter-registers.

Accessibility is the big advantage of this self-contained register. Read-o-Matics are installed *outside*, often in convenient "reading stations" which a meterman can read quickly and easily. This system is safer, too, because it completely eliminates the dangers involved in climbing down into underground vaults and other inconvenient locations.

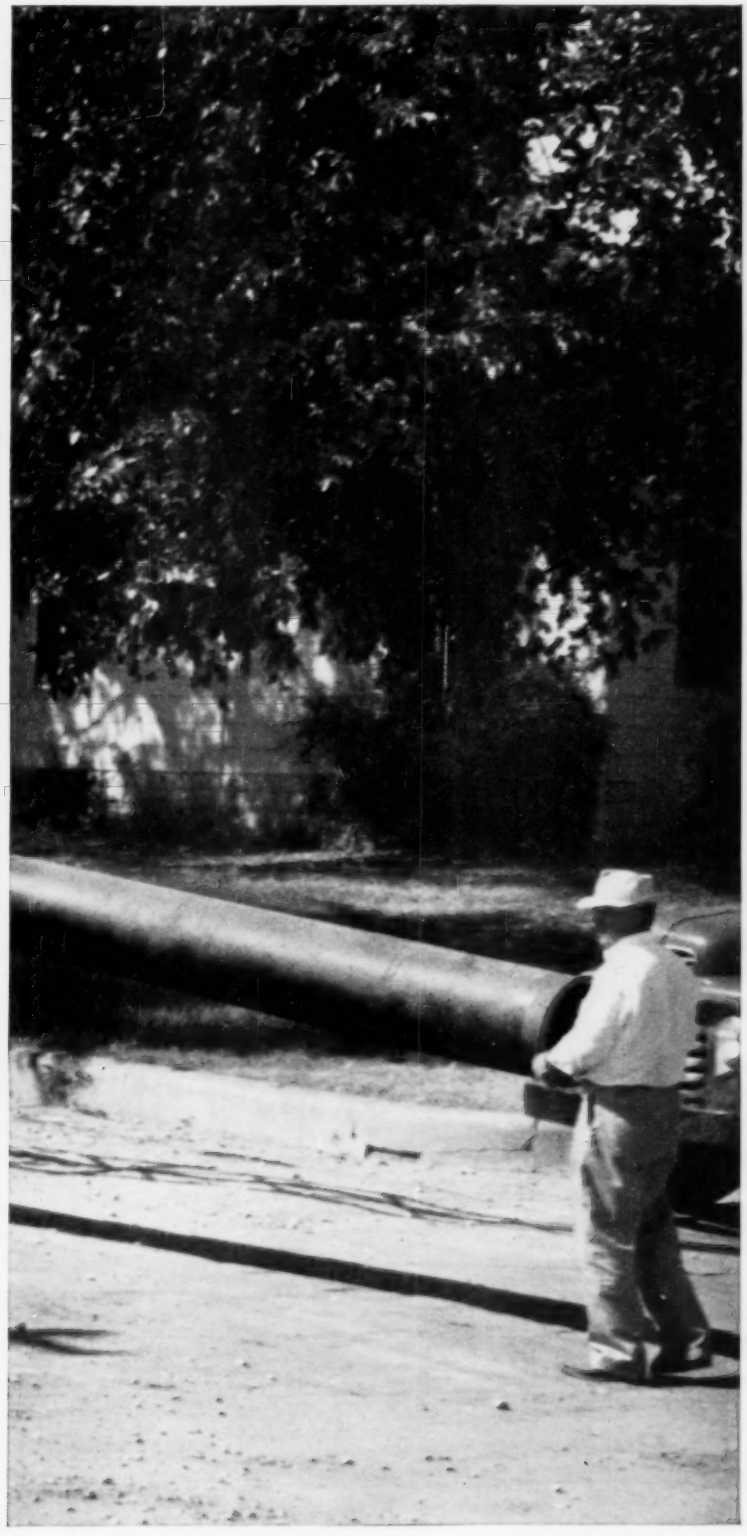
Install this faster, lower-cost reading system in your water department. Write for literature or call your Badger representative for a demonstration.



Badger Meter Mfg. Co.

4545 W. Brown Deer Rd.
Milwaukee 23, Wisconsin

12-60



GOES TO BED WITH ITS WORKING CLOTHES ON

From the moment it is installed, cast iron pipe begins working—will deliver its full flow of water for over a century.

Here in Kansas, as part of a major water expansion program, 15,000 feet of cast iron pipe were put to bed. Ease of assembly, bottle-tight joints, and assured full-flow capacity through cement lining were important factors in the selection of cast iron pipe.

An interesting feature was the uncovering of distribution mains constructed of cast iron pipe manufactured in 1887. The pipe was in excellent condition and was put back in water service.

Cast iron pipe is always working. In fact, once it is installed, one can generally anticipate no major repairs or replacements for at least a century.

CAST IRON PIPE RESEARCH ASSOCIATION,
Thos. F. Wolfe, Managing Director,
3440 Prudential Plaza, Chicago 1, Illinois

CAST IRON PIPE
THE MARK OF THE 100-YEAR PIPE

PURIFYING ROOM of Ypsilanti Michigan Water Department.

NATIONALS bring new bookkeeping efficiency to municipalities.

"Our *National* System"

saves us $3,500 a year...

pays for itself every 12 months."

—City of Ypsilanti Water Department, *Ypsilanti, Mich.*

"We are so pleased with our National System that we feel we must thank you for making this operation possible," writes John Max, Director of Utilities, City of Ypsilanti, Michigan.

"When your representative called on us, we were looking for a way to post the Water Department ledger card, imprint the customer stub receipt, certify our portion of this receipt, and record the entry on a journal. All this in one simultaneous operation. While we wanted this posting operation, we truly doubted it possible. Your representative told us we would be able to do it with a modern National System.

"The results of our National System have far exceeded expectations. In one fast, accurate operation, we obtain all the information I mentioned above. What is more, we also get a grand total of the money collected each day—a real help for daily balancing.

"Best of all, our efficient National System saves us $3500 a year . . . pays for itself every 12 months. Again, we thank you for your great assistance in making these savings possible."

John Max

Director of Utilities,
City of Ypsilanti, Michigan

Your *municipality, too, can benefit from the many time- and money-saving features of a National System. Nationals pay for themselves quickly through savings, then continue to return a regular yearly profit. National's world-wide service organization will protect this profit. Ask us about the National Maintenance Plan.*
(See the yellow pages of your phone book.)

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1039 OFFICES IN 121 COUNTRIES • 76 YEARS OF HELPING BUSINESS SAVE MONEY

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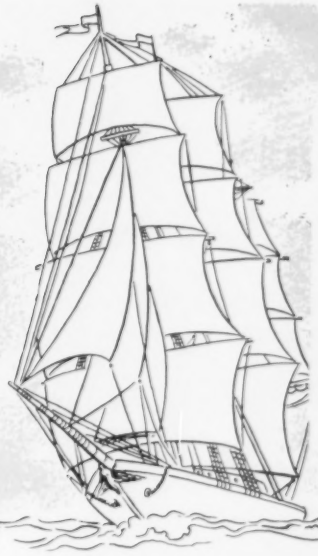
Why Rust-Oleum is different—

and what this difference, backed by 35 years of industry proof, means to you!



A Sea Captain developed it . . . Industry proved it!

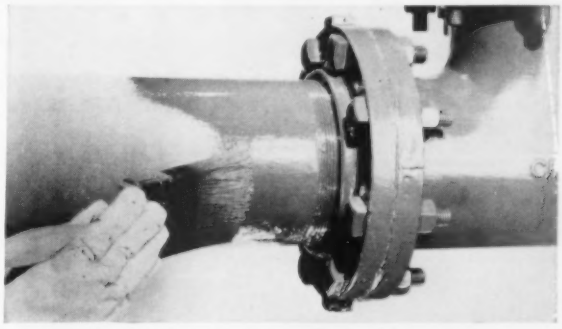
The original Rust-Oleum formula was developed nearly fifty years ago by Sea Captain Robert Fergusson, who became intrigued with the rust-stopping qualities of fish oil early in his career. Creating a *special treatment* for the fish oil, he used the *specially-processed fish oil* as the vehicle in combination with fine rust-inhibiting pigments. The result? A coating that actually *stopped rust* when applied directly over sound rusted surfaces, after scraping and wirebrushing to remove rust scale and loose rust. Possible, because the *specially-processed* fish oil penetrated the rust to bare metal. This was the birth of Rust-Oleum's *exclusive* 769 Damp-Proof Red Primer.

PROVED THROUGHOUT INDUSTRY FOR OVER 35 YEARS

Today, Rust-Oleum in its many systems and colors, has been proved throughout industry for over thirty-five years. This proof by leading industrial users is your assurance of savings in time, money, and metal. Economies made possible by the fact that Rust-Oleum 769 Damp-Proof Red Primer goes right over the sound rusted metal—usually eliminating costly surface preparations. And Rust-Oleum, in its various systems, resists rain, sun, fumes, heat, weathering, chemicals, etc., for lasting beauty over the years.

RUST-OLEUM NEW COLOR HORIZONS SYSTEM

The Rust-Oleum New Color Horizons System introduces a new coating concept to industry. It combines four important factors: (1) the ability to stop rust, (2) smart, modern color harmony, (3) the durability to last and last, (4) ease of application that saves time, money, and metal. See how this system can bring lasting beauty to your plant, machinery, equipment, pipes, tanks, structural steel, fences, etc. Write for complete information or contact your nearby Rust-Oleum Industrial Distributor. He maintains complete stocks for prompt service.



RUST-OLEUM®

There are imitations, but only *one* Rust-Oleum. It is distinctive as your own fingerprint.

STOPS RUST!®

ATTACH TO YOUR LETTERHEAD

Rust-Oleum Corporation
2654 Oakton St., Evanston, Illinois

Please send me the following at no cost or obligation:

- ☐ New Color Horizons Systems Catalog featuring 110 actual color standards and 69 photo applications.
- ☐ Free test sample of Rust-Oleum 769 Damp-Proof Red Primer to be applied over sound rusted surface.
- ☐ Results of radioactive tracing study on Rust-Oleum fish oil penetration

15,000 Patterns

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WITH LARGE STOCKS MAINTAINED FOR PROMPT SHIPMENT ANYWHERE

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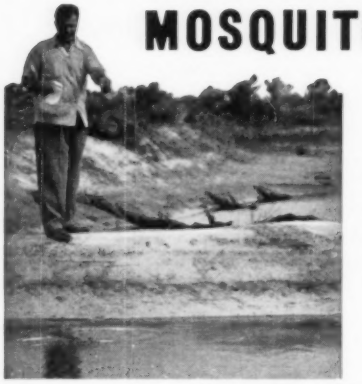
TOSSITS KILL MOSQUITO LARVAE



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NO SPECIES IMMUNE

100% Kill in All Breeding Places Swamps, Canals, Catch Basins, Rain Pools, Ditches

Just toss them into infested water, capsule dissolves in minutes, spreading a lethal film in all directions on the surface. One Tossit larvicides 100 to 750 feet of water.

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IDEAL FOR HARD TO REACH AREAS

ONE MAN WITH TOSSITS DOES THE WORK OF FIVE WITH HAND EQUIPMENT

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OVERWHELMINGLY ACCLAIMED BY ENGINEERS THE WORLD OVER...

the Zeiss Automatic Level

For 7 years now, in U.S. and Canada, contractors of every size, industrial, government and military field men have *tried* and *proved* the Zeiss automatic level (K&E NP5028). They all concur: it's faster to use, far simpler . . . and far more accurate.

With the Zeiss even a beginner can close with the speed and accuracy of a veteran. Rough level *just once* and go to work. Eliminated for good is the headache of constantly recentering a telescope bubble. The force of gravity does the job automatically, acting on a pendulum-suspended prism. Job time, on an average, is *cut in half!*

A book could be written about the success stories of this remarkable instrument. As a matter of fact, one has been . . . a fascinating collection of case histories from around the world. The book is full of worthwhile tips and techniques. It's free, and a copy can be yours in a week or so, if you write for it, today.

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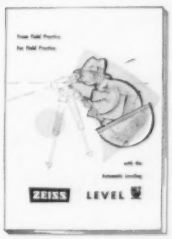
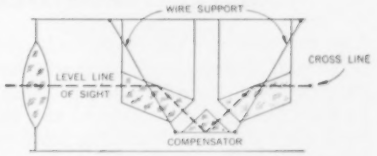
of the Zeiss level casebook, write to Keuffel & Esser Co., Hoboken, N. J., Dept. AC-6

The Zeiss Automatic Level (K&E NP5028) is sold exclusively through K&E dealers.



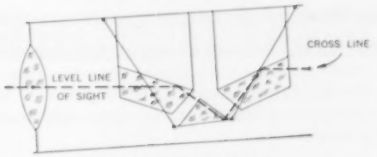
How does the Ni 2 work?

A *built-in compensator* . . . a lower prism suspended by specially treated fine wires . . . *automatically maintains a level line of sight* through the pull of gravity, as these illustrations explain.



Telescope horizontal

When telescope tilts up, compensator swings backward



When telescope tilts down, compensator swings forward

AUTOMATIC COMPENSATOR *ALWAYS* MAINTAINS A LEVEL LINE OF SIGHT

K&E

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2024

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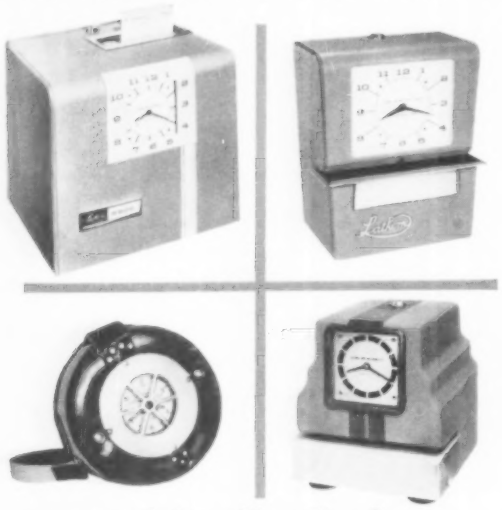
time *city managements' greatest single . . . cost factor!*



control it effectively with Lathem

PAYROLL RECORDERS
JOB TIME RECORDERS
TIME STAMPS
WATCHMAN CLOCKS

You can eliminate time leaks and increase the efficiency of all departments with a Lathem machine. Precision-built for a long life of care-free service, Lathem machines are designed and engineered to meet all of your time recording needs with absolute accuracy and maximum speed.

There is a Lathem machine for (1) payrolls, (2) parking lots, (3) garages, (4) public buildings and watchmen's rounds, (5) dating and numbering papers, (6) mail arrival, (7) booking and releasing prisoners, (8) records of sequence handling, and (9) entry of important records and deeds as well as many other activities where an accurate time record is essential.

Write, wire or call for complete information.

LATHEM TIME RECORDER COMPANY

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GENTLEMEN: Without obligation, please send me full information about Lathem time equipment, including prices.

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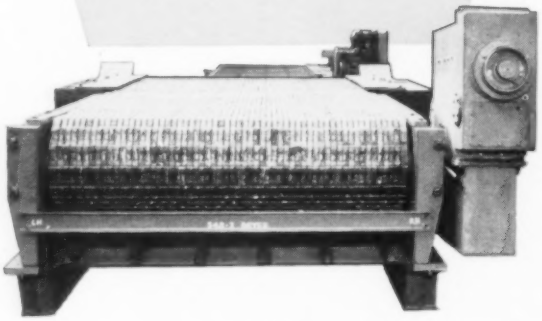
ILLINOIS INCINERATORS
with Cast Steel Links
Offer
Trouble Free Performance
High Efficiency



Testing incinerator before installation in New York City's Gansevoort Refuse Disposal Plant.

Cast steel links on both the bar/key type and chain grate models provide less brittle grate surface than ordinary cast iron, with greater resistance to heat and the abrasive qualities of some refuse.

The ORIGINAL overlapping link or key design eliminates the possible clogging or damaging of links — reduces sifting of material through grate.

- Any desired number of tuyeres for better zone control
- Easily accessible take-up mechanism
- Automatic feed — No heavy stoking or cleaning of fires
- Continuous discharge of decontaminated residue

All Illinois Incinerators are customized to your needs . . . Built in any size desired up to 24 feet wide. You specify, we satisfy.

Supervised Assembly at Your Plant
Write Today for Colorful Brochure

Illinois Stoker

ALTON, ILLINOIS

Mfrs. of: Incinerators • Industrial Stokers • Sintering Machines

A YORK Ice Skating Rink Offers Winter Fun For The Whole Family

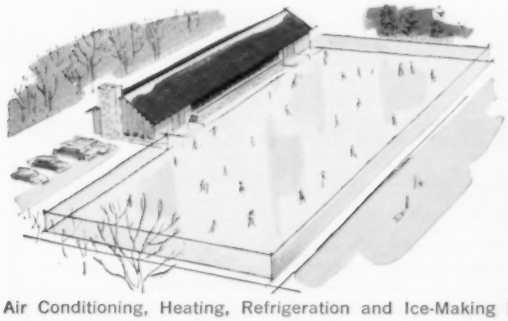
—Pays for itself from its own revenues

POPULAR, FAST-GROWING SPORT—Americans have really taken to the ice! Skating is recognized as a healthful, outdoor winter activity for people of all ages. Today, ice rinks are found all over the U.S., and 90% of all skating is done on *man-made* ice.

PROVIDES WINTER RECREATION PROGRAM—Many communities have installed York Ice Rinks to complement swimming pool facilities, creating year-round recreation. With York equipment freezing the ice, you get 5 months of uninterrupted skating.

FINANCE WITHOUT TAXES—Municipalities need not raise taxes to build an ice rink. It can be financed from bonds issued by a non-profit corporation, specially formed for that purpose. Bonds are paid off from rink admission fees, skate rentals, concessions.

YORK EXPERIENCE AT YOUR SERVICE—York offers refrigeration equipment for any ice rink application. York, with 75 years' experience, also offers valuable engineering help, and York Certified Maintenance assures peak equipment performance year after year.



Another York Trail Blazer Concept Proved in Action At *Municipal Ice Rink, Greenville, Pa.*—This town of 10,000 people built a $70,000 outdoor ice rink and warming house that was completely financed without taxes. Dependable York equipment keeps the ice frozen, assuring months of perfect skating. Write York for complete details of the "Greenville story."

YORK®

YORK CORP., SUBSIDIARY OF BORG-WARNER CORP. 4206 SOUTH GRANTLEY RD., YORK, PA.
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Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Applications

New steels are born at Armco

They **TESTED** our pipe like this **50 YEARS AGO!**

Today you have a better check.

When this picture was taken, about 1910, engineers and builders had practically no backlog of experience with corrugated metal pipe. Armco Pipe had been on the market only a few years. So tests such as this gave buyers confidence.

Today there is a better test at your disposal—the test of more than 50 years of actual service. Through these service records you can view the performance of Armco Corrugated Metal Pipe in all kinds of jobs. Storm sewers, sanitary sewers, utility conduits, culverts, tunnels, stream enclosures and bridges are some of the applications in which Armco Pipe has proved itself.

Armco Pipe is a member of a full line of drainage and construction products made and sold by Armco. You can get complete facts on versatile Armco Corrugated Metal Pipe in our new catalog. Use the coupon to order your free copy. Armco Drainage & Metal Products, Inc., 6400 Curtis Street, Middletown, Ohio.

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SEND FOR FREE CATALOG

Sixteen pages of Specification and Application Data

Armco Drainage & Metal Products, Inc.
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6400 Curtis Street • Middletown, Ohio
Send my copy of the Armco Corrugated Metal Pipe and Pipe-Arch Catalog.
☐ Have representative call.

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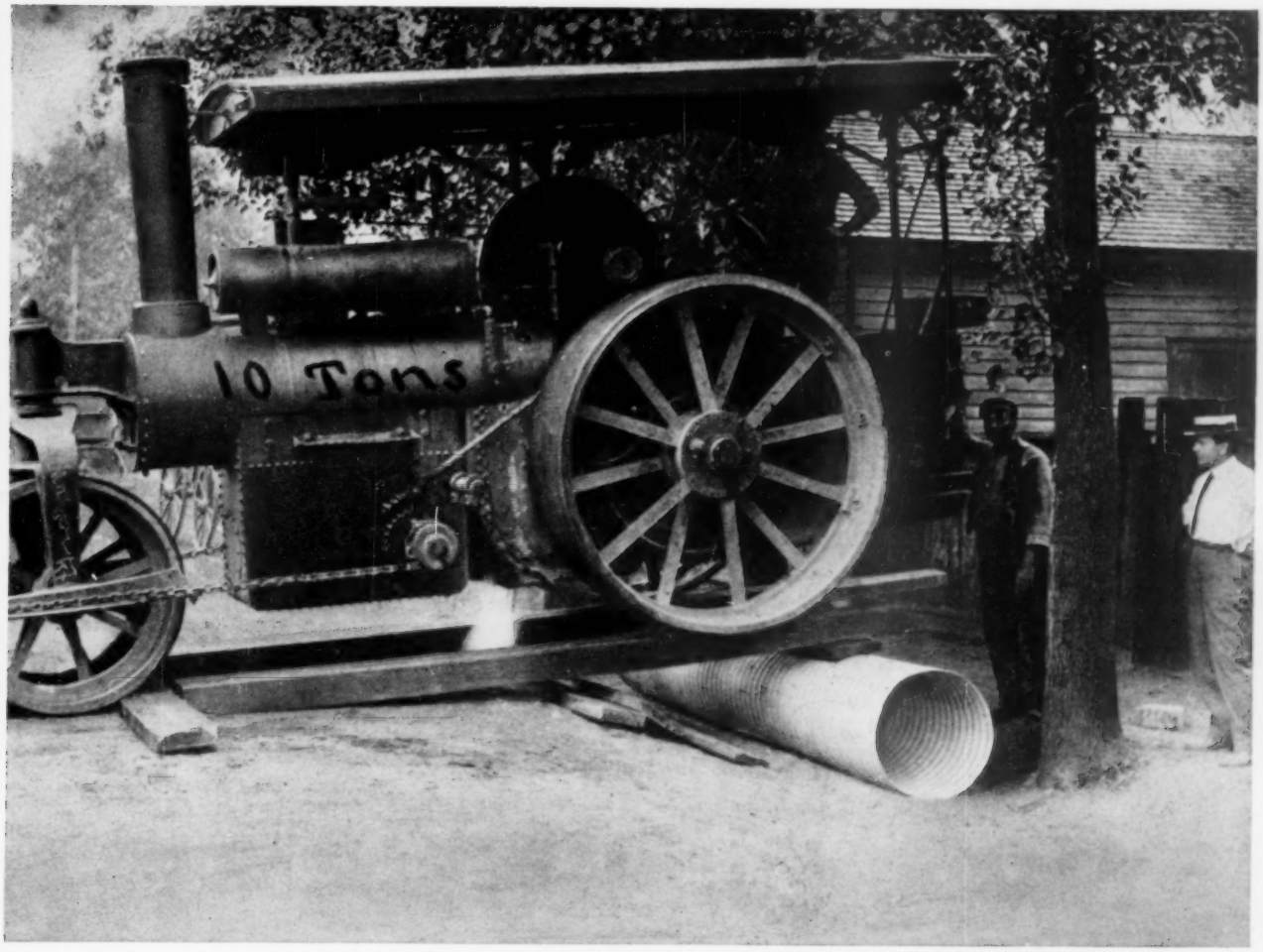

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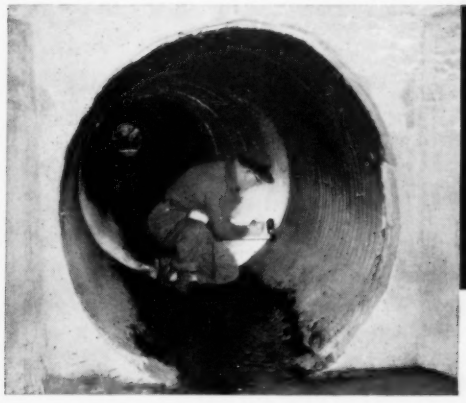

5

1. Inspection shows sewer in Pocatello, Idaho, installed in 1914, is in excellent condition. 2. Armco SMOOTH-FLO® Sewer Pipe being installed for real estate development. 3. This Armco Pipe functions as a conduit for utility lines under railroad. 4. Armco Research Engineer checks 20-year performance record of Armco Pipe under the Pennsylvania Turnpike. 5. Conveyor housing is a 96-inch diameter Armco Pipe.

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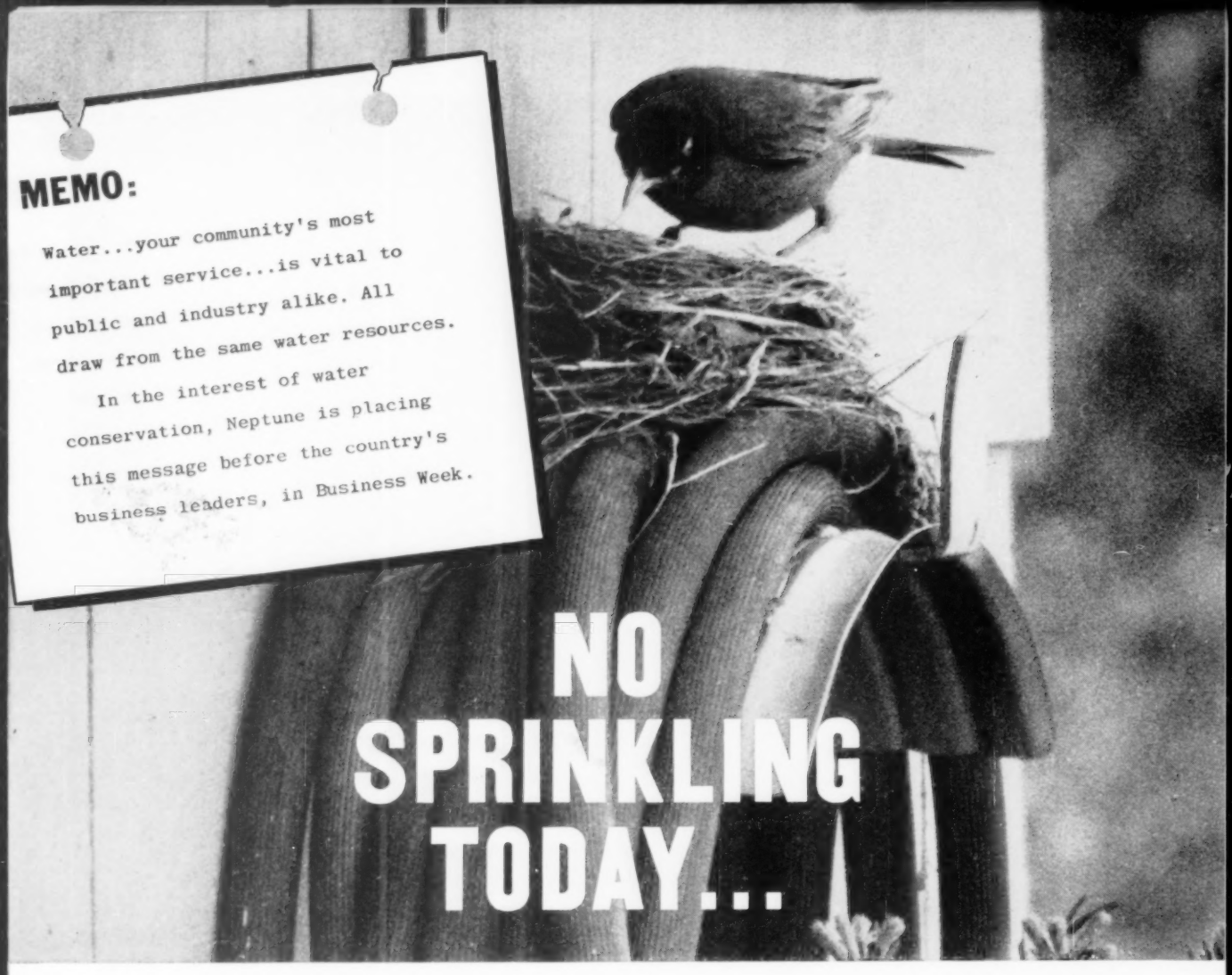
MEMO:
Water...your community's most important service...is vital to public and industry alike. All draw from the same water resources.
In the interest of water conservation, Neptune is placing this message before the country's business leaders, in Business Week.
NO SPRINKLING TODAY...

Not everyone's happy as a lark in the summer*

neptune
for a better measure of profit

Every year, in many areas of the country, water wells bottom out, reservoirs bare their skeletons, water pressures drop, and political pressures rise. It's getting worse. In 20 years the country will need twice as much water. New resources will cost billions . . . *if they can be found at all*. It's time to face up to this problem *now*.

In your business you can stop costly leaks and careless waste simply by placing meters at key points. They show where you can save water (and *money*) by improving processes, by recirculating and reconditioning water for re-use.

Water conservation—through accurate metering—is Neptune's biggest business, growing rapidly with the country's need for water. We'll be glad to help you with your water metering problem.

**Our lark's a Hartford robin, in Connecticut's 1957 drought*

NEPTUNE METER COMPANY
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LIQUID METERS
GAS METERS
ELECTRONIC SYSTEMS and COMPONENTS for MEASUREMENT and CONTROL

JUNE 1960

The American City

An orderly financing schedule makes it possible for new areas in Indianapolis to receive water promptly, through a well-engineered system.

Water-Main Extension Charges

. . . that encourage new connections and at the same time are financially self-supporting

By **G. T. HUCKABY**
Business Development Manager
Indianapolis Water Co.
Indianapolis, Ind.

Like many water utilities across the nation we have had to extend our water system beyond the present distribution network to serve newly constructed homes. Unlike some, however, we can finance these extensions on a self-supporting basis without excessive cost to the developer or home builder.

If someone, either building or living in a home not served by public water supply, wishes service from our system, he first must make an application for the main extension. We have blanks for this purpose at our office. We ask him to circulate the application among his neighbors who also may not be served and who may wish to connect if the project proceeds.

Cost Estimate

After the application is returned, our engineers make a field check, prepare construction drawings, and estimate the cost of such an extension. If the cost is less than six times the estimated yearly revenue from the new customers, we will install the main at our own expense. The estimated yearly revenue figure for any extension is based on:

- **annual estimated water bills to be paid by the prospective customers for the next six years**
- ***less* the cost of taps, meters, and meter yokes used to connect the prospective customers to the extension**
- ***plus* the amount of fire-protection water-service revenue received for six years from the local government in which the extension is to be made.**

If the extension is made outside a municipality, the amount for public fire protection is determined hypothetically on the same basis as an extension made inside a municipality.

If the cost of the main is greater than this figure, we require the applicants to post a refundable cash

deposit equal to the difference. In these cases, we prepare a deposit contract in which we agree to return the deposit in predetermined amounts, based on estimated revenues and expenses, as new customers connect to the main during an eight-year period.

If no deposit is required, we ask the applicant to post $55 and guarantee in writing that he will connect to the system within six months of the time the extension is made. This $55 either is returned to the applicant after he becomes a customer, or credited to his future water billing if he so desires.

Let us illustrate this plan by a simple example. Assume that a single applicant requests service. His home would:

- **require an 80-foot extension to our distribution system, costing an estimated $380.**
- **purchase an estimated $43 of water per year.**

However, in the six-year period we would receive only $270 from this extension (6 x $43 less cost of meters, etc., plus fire protection income). Therefore, we would ask him to make a refundable cash deposit of $110, the difference between $380 and $270.

If at any time during the ensuing eight years, another customer would connect with this new main, we would refund the $110, since the new customer would provide $227 over a six-year period, an amount well in excess of the deposit.

Subdivision Example

Let us take a larger example. Assume that a housing developer requests service for a new 100-lot subdivision. Assume that:

- **his initial construction on this 100-lot subdivision includes only eight houses.**
- **we would have to provide 1,100 feet of 12-inch main and 4,800 feet of six-inch main to serve the subdivision.**
- **the construction cost to install these mains would be $33,525.**
- **each home would purchase $43 worth of water per year.**

In a six-year period the revenue received from eight homes would be $2,390 (6 x 8 x $43 less meters, etc., plus fire protection income). This would mean that the developer would have to supply a refundable cash deposit of $31,135 ($33,525 minus $2,390).

At any time that a new house is erected on this 100-lot subdivision within the ensuing eight years, we would refund to the developer $227 (six years times $43 less cost of meters, etc.) plus a share of $1,902 public fire-protection revenue credit that has not yet been refunded. If the entire subdivision were developed we would have refunded an estimated $227 for each of the 92 remaining lots, plus $1,902 public fire-protection revenue. This would total $22,786, which is less than the original cash deposit. However, it represents about $84 per lot, which is a reasonable developer's cost for water service from a public water supply, particularly when fire protection is included.

Currently our company provides water to about 565,000 of the 700,000 people who live in Marion County. Last year, we installed nearly 50 miles of new mains to meet the needs of more than 4,000 new homes. We expect that our requirements will be about the same this year. ◄◄

Pint-Size Sweeper Transport

Twin sweeper-trailer-truck outfits are paying three-fold dividends on street-cleaning operations in outlying business and residential areas of Akron, Ohio. Records of two years' operations show that labor costs have been substantially reduced, cleaning schedules have been stepped up so that each area is visited much more often and over-the-road time and expense have been drastically cut.

The outfits are identical Tennant Model 80 power sweepers, Selma two-wheel trailers and GMC ¾-ton pick-up trucks. Operated by one-man crews, the two units have replaced hand-cleaning services formerly provided by seven station men (white wings).

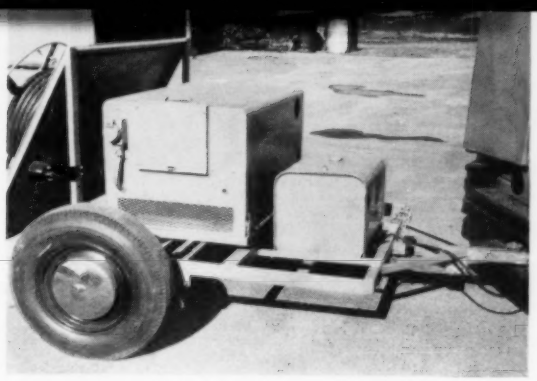
The operator loads the sweeper on the trailer at the city garage, receives his assignments, and tows trailer and sweeper to the area of operation behind the pick-up truck. At the cleaning site he unloads the sweeper, cleans the area, dumps the sweeper box when full and loads the sweepings into the pick-up. When the truck is full, the operator takes it to the dump.

Both trucks are equipped with two-way radios by which they are controlled from the street-cleaning field office. By transporting the light machines from job to job, the city saves—with every move—the cost of over-the-road mileage on its larger machines. Far less time is required in transit.

Akron purchased another Model 80 in 1959 for use in the central downtown area during daytime hours. It is assigned primarily to bus stops and cross-walks. The many comments and compliments from downtown businessmen reflect greatly improved community relations.

WILLIAM L. KASER
Street Cleaning Superintendent
Akron, Ohio

The operator loads the sweeper on the two-wheel trailer before towing it to the first designated street-cleaning project of the day.



If power is not readily available, this trailer-mounted Onan generator provides it.

The 20-foot "antenna" on this Chevrolet step-van truck draws in air for sampling . . .

Mobile Air Sampler

By **WILLIAM FITCHEN**
Air Pollution Control Officer

The County of Orange in southern California has placed in operation a $50,000 mobile air-sampling unit as part of a long-range county air-pollution-control program. The truck-enclosed sampling laboratory is complete with its own trailer-mounted 110-volt generator. It will pinpoint sources of air contamination by augmenting three permanent sampling stations located near major population centers in the 800-square-mile urbanized and industrialized county to the east and south of Los Angeles.

The mobile "sniffer" is the product of six months of cooperative effort on the part of Orange County's air-pollution-control personnel and the Beckman Instrument Company of Fullerton, California. It is equipped with both wet chemistry and infra-red analyzers that permit the almost instantaneous analyses and recording of the six airborne components making up common smog conditions.

The one-ton Chevrolet step-van truck in which the equipment is installed has thermal insulation protecting the technician and his delicate instruments from undue heat. After driving to the area to be sampled (it does not sample on the move) the driver-technician raises a 20-foot-long plastic-lined steel sampling tube above the truck, connects to 110-volt current and is ready to begin sampling.

When sampling in areas where 110-volt current is not readily available, the gasoline-engine-driven 110-volt generator trailer is used. A 250-foot-long transmission cable makes it possible to locate the generator far enough down wind so that its fumes do not contribute to contaminants being sampled.

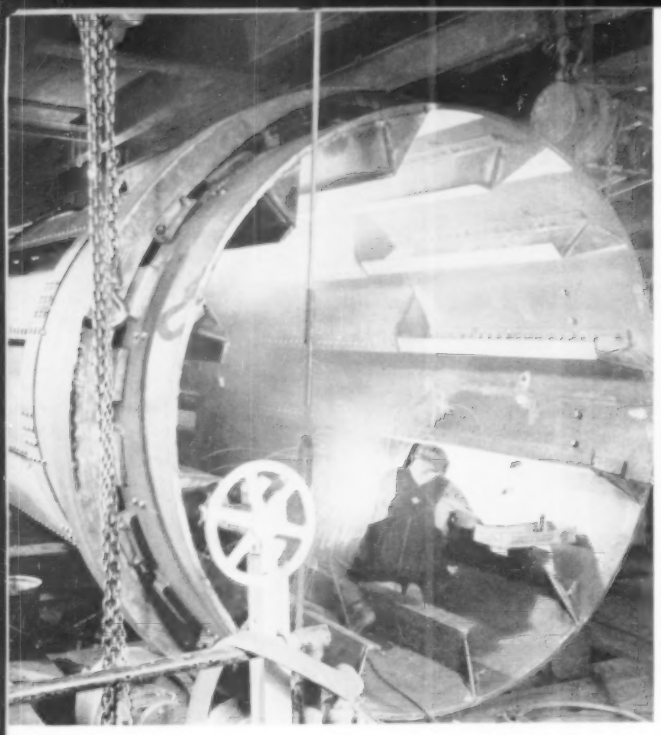
Electric-motor-driven vacuum pumps draw atmospheric air through the sampling antenna and pass it through the two infra-red analyzers and four wet chemistry units where oxidants, the two oxides of nitrogen, sulphur dioxide, hexane and carbon monoxide are individually measured and recorded. A permanent record is provided by amplifying the readings to a degree permitting the use of continuous logarithmic and linear Daystrom-Weston recorders.

The mobile station also includes a sink with a chemical-resistant stone drainboard, an air-charged water-storage system, storage facilities for lab instruments and refrigeration chambers to permit cooling compressed samples and removing ambient moisture.

Automatic operation of the entire sampling system makes it possible for the lab to operate unattended for 24 hours at a time. Shock mounting of all the instruments makes it possible for the driver-technician to have the unit "on stream" within an hour of its arrival at its sampling location.

Use of this over-the-highway air sampling laboratory eliminates the need for construction of additional expensive permanent air laboratories in the county for the foreseeable future. It has provided Orange County's air-pollution-control office a method of carefully pinpointing sources of air contamination and has at the same time reduced long-range costs of carrying out sampling and control. ◄

. . . by passage through Beckman instruments shown on this control panel and the results are recorded on Daystrom-Weston charts.



This interior view of one of the dryers was taken during reassembly of the unit at the sewage treatment plant. The rotating unit tumbles the sludge through the stream of hot gases.

Conveyor belts carry dehydrated sludge from the vacuum filters to the driers . . .

New Dryers

Milwaukee replaces old units with more efficient equipment to gear production to increased sewage flow

By **WM. LANDSIEDEL**
Plant Superintendent
Sewage Disposal Plant
Milwaukee, Wis.

Ten new fertilizer dryers will keep Milorganite flowing out of Milwaukee's Jones Island Sewage Treatment Plant. These units, installed over the past five years, replace the original dryers that have been in continuous service since 1925.

The new dryers, constructed by the Milwaukee Boiler Mfg. Co., are 57½ feet long and 8 feet in diameter. Fabricated primarily of ⅝-inch- and 1-inch-thick steel, the dryers were assembled at the Milwaukee Boiler plant, then taken apart in eight-foot sections and transported to the sewage treatment plant where they were re-assembled and housed in oven-like heating units.

The new dryers are the same length as the old ones but are one foot larger in diameter. However, the increase in capacity is considerable. Whereas each original dryer evaporated from 6,000 to 7,000 pounds of water per hour, the new units can evaporate from 10,000 to 13,000 pounds of water per hour depending upon the condition of the sludge cake. This increase in capacity is not due to dryer efficiency alone, but also because of more efficient combustion equipment and other improvements dictated by 35 years of operation.

Cyclones

Each dryer is a self-contained unit, including a combustion chamber fired with either fuel oil or natural gas. Under normal operating conditions natural gas is used. The dryers are the largest counter-flow units in the country. In this type, the hottest gases come in contact with the warmest and dryest sludge, and cool off as they pass through the unit toward the cooler and wetter material.

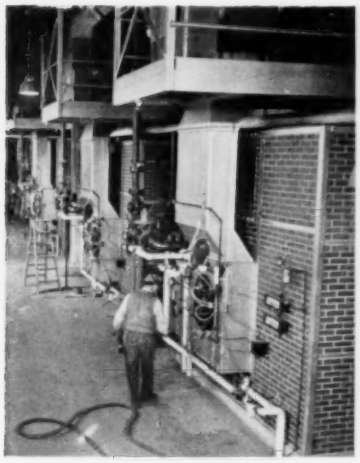
Each dryer installation also has its own cyclone for the removal of fine material and larger dust particles from the drying gases. After leaving the cyclones, the gases pass through a series of water sprays for final scrubbing before being discharged to the atmosphere through a 350-foot-high stack.

Sludge drying is a 24-hour-a-day, 7-day-a-week proposition. Because of constantly changing conditions, an operator and assistant operator are on duty at all times to control manually the dryer operations to meet these changing conditions.

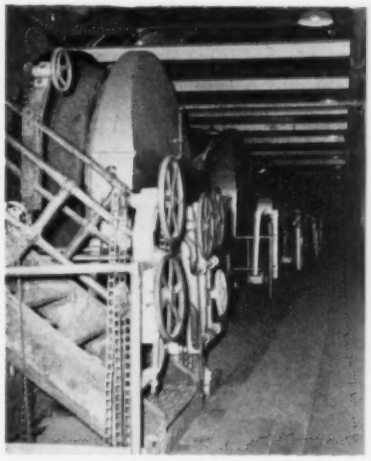
Milorganite consists of everything retained on a 65-mesh screen and passing a 12-mesh screen (Tyler "standard" screen scale sieve). Other than ferric chloride to cause the sludge to coalesce and promote better filtration, nothing is added to change the characteristics of the dried product. Sludge from the Milwaukee plant is peculiar in that it consistently contains 6% or more of nitrogen.

The process of converting sludge to the finished product consists of dehydration, drying, classifying, storing and bagging.

The activated sludge is first dehydrated by a bank of 24 Dorr-Oliver vacuum filters. A series of conveyor belts carry the dehydrated sludge, containing from 83% to 84% moisture, to the dryers. Rotation of the dryers conveys the sludge through the units to a second system of conveyors. These conveyors, comprising screw and bucket units, transport the dried material to a primary series of Sweco (Southwestern Engineering Co. of Los Angeles) separators for classification. Each primary separator consists of two screens in a container



. . . which are self-contained units, each heated by fuel oil or natural-gas-fired furnaces . . .



. . . where water is driven off and the dried product is discharged at the far end and conveyed . . .

. . . to the primary and the secondary separators for classification and the return of . . .

Speed Milorganite Production

that simultaneously oscillates and vibrates.

All material retained on the top screen (8-mesh) returns to a pair of Stedman mills, is ground up and returned to the entrance end of the dryers where it mixes with incoming filter cake. That retained on the second screen (11-mesh) goes to a set of Allis-Chalmers roll mills where it is ground up and conveyed to a secondary set of separators for final classification. The material passing through the second screen is finished product and goes to the storage and packaging building.

In the secondary separators, also of the oscillating and vibrating type, all material retained on the top screen (11-mesh) returns to the entrance end of the dryers while that retained on the second screen (60-mesh) is finished product. The fine material passing through the second screen flows through a tube to a steel storage bin and then to a pellet machine.

Nothing is lost or wasted. The fine material removed from the drying gases by the cyclones also returns to the steel storage bin where it mixes with the material passing the second screen in the secondary classifiers. We pass this fine material through a California Pellet Mill Co. unit where the material is moistened with steam and water and converted into pellet form. The pellets are then ground and sent to the primary separators for classification.

The finished product is stored and bagged in an adjacent building and sold throughout the United States and Canada and some foreign markets as a commercial fertilizer. The Milwaukee Sewerage Commission markets the product through distributors throughout the country.

At the present time the Jones Island plant treats an average of 180 mgd of sewage. The incoming sewage passes through coarse screens, grit chambers, self-cleaning fine screens and then through the aeration and settling tanks. With this quantity of sewage, milorganite production runs about 240 tons per day.

The Milwaukee sewerage system operates under a five-man commission with Ray D. Leary serving as Chief Engineer and General Manager. ◄◄

. . . some of the material back to the driers for the removal of the remaining moisture . . .

. . . while the finished product is sent to the storage and bagging building for shipment to the consumer.

The Vincent Avenue Bridge, now under construction, permits the extension of the street over Walnut Creek Wash.

14 Bridges In Two Years

Major improvements to a large drainage structure result in an extensive bridge replacement program

By **GEORGE AIASSA**
City Manager
West Covina, Calif.

Rapid urbanization can be blamed —or credited—for our almost unprecedented bridge program. Walnut Creek Wash, which splits the City of West Covina down the middle, is one of the channels scheduled for improvement by the federal government under the 1936 Flood Control Act. It drains much of the government-owned lands of the San Gabriel Mountain area lying north of the city. The original plans called for completion of the work in 1965 or 1966; however, because of the rapid urbanization of the West Covina area the government accelerated its program and scheduled the completion of the Walnut Creek Wash system for 1962, giving us about two years to construct the bridges.

Where bridges now exist, they will be replaced with bigger and better structures. In addition, several new bridges will be built where streets now dip to go through the wash (which is usually dry) or where streets deadend against the creek.

The betterment program will save us considerable money at this time. The Los Angeles Flood Control District, by statute in the Federal Flood Control Act of 1941, is obligated to replace all existing bridges and paved dips with a bridge similar in size to the existing bridge or dip. This is where our bridge betterment program enters the picture. The numerous reasons for this betterment program may be grouped into these three general categories:

1. Rapid growth has made the existing narrow bridges pedestrian and traffic hazards.

2. Doing the work now when new bridges must be built will save local taxpayers a considerable sum of money.

3. The city is rapidly becoming a regional center of civic and commercial services in the San Gabriel Valley.

The Sunset Avenue Bridge serves as a good example of the betterment program. The present 36½-foot bridge (28-foot roadway and one walk) will be replaced with a 91.7-foot bridge having an 80-foot roadway and two sidewalks. The city is providing the additional funds needed to construct the larger bridge.

Redesigned Channel

Early in 1957 a Civic Improvement Committee comprised of interested citizens and advisors from the city council and city staff focused its attention on our bridge needs. The committee held many meetings with the Corps of Engineers and the Los Angeles County Flood Control District. One of the items discussed was the trapezoidal design for Walnut Creek Wash.

In 1941 when West Covina was little more than orange and walnut groves, the trapezoidal chan-

Bridges will eliminate several paved dips passing through the wash as shown here.

Bridges such as this narrow steel structure will be replaced with modern types sufficiently wide to handle today's traffic.

nel offered the most inexpensive system because of the low right-of-way costs. Now, however, the community is sxploding, with property in great demand and costs high. Reconsidering these factors led the responsible authorities to change the design of the channel from trapezoidal to rectangular.

This change will save money for all concerned. First, the fact that considerably less land is required for the rectangular channel will more than offset the additional construction cost, thereby saving money for the federal government. Another big saving for all parties concerned is bridge construction. The trapezoidal channel would require spans of approximately 100 feet whereas those required for a rectangular channel need be only about 50 feet.

Last but not least, much land adjacent to the creek will remain useful to both private and public owners.

Preliminary estimates show the proposed bridge costs to range from $37,700 for the smallest to $135,000 for the largest, with a total of $1,012,500 for the 14 bridges. One of these, estimated to cost $91,900, is a new structure to be paid for completely by the city. Replacement costs to be paid for by the federal government are estimated at $588,800, or just over half of the total amount. The balance will be covered by the city as betterment costs.

No Bond Issue

The Civic Improvement Committee found in its studies that the city could carry on this ambitious program without resorting to a bond issue—or cutting down other services so vital to a growing community. (From 1950 to 1959 West Covina's population increased from 4,499 persons to an estimated 50,000 persons.)

We will handle financing in several ways. Bridges located on streets of major county interest will be paid for with funds allocated from state gas-tax funds. In cases where the bridge is located on a state highway, we are attempting to obtain some aid from the state. Some of the work will also be covered by existing funds.

Of course this project will tax the staff, facilities and city reserves for a two-year period, but there is a pioneer spirit in the City Council and staff. If the job is to be done, we will do it—and at the same time will keep up with all other necessary services even though West Covina has grown 900% in ten years. ◄◄

This one-man operation for both collection and disposal was designed with small communities in mind.

Small-Town Refuse Handling

. . . can be sanitary and economical even down to the size of a one-man operation, as Stratford, Okla., has shown

By REUEL H. WALDROP*

Stratford's refuse handling program, although curtailed at present by an unsolved social and financial problem, definitely showed that:

1. A community of 1,200 or less people can, from a mechanical and engineering standpoint, have an effective and economical sanitary refuse collection and disposal system.

2. County and federal cooperation is not restricted to the larger cities.

An account of the mistakes, although minor, as well as the good points of Stratford's operation should help other communities contemplating establishment of refuse collection and disposal service.

Collection and disposal of refuse in this Oklahoman municipality was part of a comprehensive community sanitation program that included sanitary sewage disposal, the elimination of poultry and animals from the densely populated areas, and a general clean-up of the town. Participants in the program and the environmental sanitation survey, other than town personnel, included the Oklahoma State Department of Health, represented by Leroy Rachels, entomologist; the Garvin County Health Department, represented by Dewey Smith, registered professional sanitarian, and the writer as sanitarian with the Communicable Disease Center, U. S. Public Health Service, Oklahoma City. Much credit for the program also goes to Mayor Kenneth Andrews and the Town Board.

* Mr. Waldrop holds the position of Technical Consultant with the Communicable Disease Center, U. S. Department of Health, Education and Welfare, Public Health Service, at Oklahoma City, Okla.

Special Equipment

Our studies showed that conventional methods of refuse collection and disposal were too expensive to be practical. Thus, we set out to develop equipment that could be efficiently and economically used to provide good service for a small community. A monthly charge of $1 for each residence and an average of $3 for business places was to finance the program, giving an estimated monthly income as follows:

410 residences	$410.00
20 businesses	60.00
Total	$470.00

The prime mover, used for both collection and disposal, consisted of an International "Farmall 130" tractor having 19 drawbar horsepower. This rubber-tired unit was equipped with a hydraulically operated, nine-cubic-foot front-end loader and a fast-operating, rear-end hitch. A 200-pound wheel weight permanently fastened to each of the rear wheels provided increased traction, and a combined weight and scarifier assembly, designed as a counterbalance to the front-end loader, permitted scarifying of the "cut" area at the landfill. The assembly consisted of 400 pounds of concrete mounted in a steel frame plus three six-inch harrow-like teeth welded to the frame to make the scarifier.

A specially designed trailer, pulled by the tractor, served as the collection vehicle. It was made of a circular tank mounted on a four-wheel tandem trailer and equipped with a hydraulic hoist for dumping. The 12-gauge steel tank was five feet in diameter and ten feet long, and had a capacity of eight cubic yards. By means of the tractor's hydraulic pump, the front end of the tank could be raised for gravity packing or dumping. The front end was left open but a hinged and latched steel gate enclosed the rear.

After construction of the equipment, the Town Board passed an ordinance requiring the use of 20- to 32-gallon covered galvanized metal refuse containers, curb or alley collection twice weekly in residential areas and daily in the business district, and sanitary landfill as the method of disposal. The collection route plan allowed the operator about three minutes for each collection, with an average of 130 residential and 20 business-place collections a day. The operator's

work-week, with an allowance of one hour overtime each day to complete properly the landfill operation, consisted of five nine-hour days and five hours on Saturday.

After completion of the initial clean-up operation, the work load averaged out to one load of bulky refuse each morning from the business area and two loads from the residential area. Each load consisted of about five cubic yards of gravity-packed refuse weighing about 100 pounds per yard.

With the landfill located only about half a mile from the center of town, it never took longer than two to five minutes at ten mph to drive to the disposal site. At the site, the operator dumped the load onto the working face, substituted the weight assembly for the trailer, and spread the material evenly over the working face and compacted it. The quick-operating rear-end hitch made the interchange of equipment very rapid (only a few seconds) and the entire operation at the fill site took from ten to fifteen minutes. All refuse was more thoroughly compacted and covered at the close of the day.

Landfill Site

The soil at the landfill was mostly sandy loam, and the small tractor handled the "cut-cover" operation well. The trench was kept about eight feet wide and the lift five feet deep. The working face averaged about 12 feet long, or 96 square feet in area. Thus, some 48 cubic feet of earth was needed to cover the area to a depth of six inches at the end of each day, requiring about six loads for the loader. At first we were concerned that the tractor would not provide adequate compaction, but with the additional 800 pounds, the wheels provided excellent compaction.

The program started in November, 1958 and operated through April 1959, resulting in the following cost data:

Capital	
Equipment (including assembly)	**$3,110**
Monthly Operating Cost	
Operator	**235**
Operation cost (est.)	**60**
	295
Payment for tractor (2-year amort.)	**150**
	$445

A competent operator is most important, for this refuse system is a one-man operation for both collection and disposal.

The hydraulic pump on the tractor actuated the trailer dumping mechanism.

At the end of each day this small amount of refuse is covered with six inches of earth to keep the fill sanitary.

At Stratford, the front-end loader was narrower than the rear wheels of the tractor, thus an outside ridge was always left in the "cut" area. Generally, however, the loader should either be as wide as the rear wheels or the weight-scarifier assembly should have a grading blade to cut down the ridge. Also, if finances permit, a larger tractor should be considered.

A 14-foot-long tank flattened to an oval shape would allow for more usable space and better gravity compaction, thereby increasing efficiency of the collection unit.

Financial Problem

As previously mentioned, Stratford's program is now curtailed by a social and financial problem, one which is no doubt shared by many small communities. That is the migration of the younger and working people from small towns into the fringe areas of the larger urban areas.

Parents and older people stay behind in the smaller communities, like Stratford, where they can live more economically. Many of these are supported solely by old-age pensions and object to any increase in living expenses.

However, community size should be no deterrent to sanitary refuse collection and disposal and it is hoped that the experiences related here will aid others in developing such a program. In most cases the adoption of a good refuse collection and disposal program can be integrated with a comprehensive sanitation program that includes sewage disposal, drainage, vacant area sanitation and related problems. ◄◄

Three acres of aluminum protect the reservoir contents from becoming polluted and also cut down on evaporation. The top of the auxiliary reservoir is seen in the background.

A Roof for Pawtucket's Reservoir

Thin aluminum sheets on a steel supporting frame protect 20 million gallons of treated water

By JOSEPH A. KEITH
Director of Public Works
Pawtucket, R. I.

Three acres of aluminum sheeting only 0.032 inches thick add to the protection of the drinking water for some 120,000 people living in Pawtucket, R. I., and neighboring communities. We used the material to cover our 20,000,000-gallon Stump Hill reservoir, a masonry basin constructed 82 years ago for the storage of treated water.

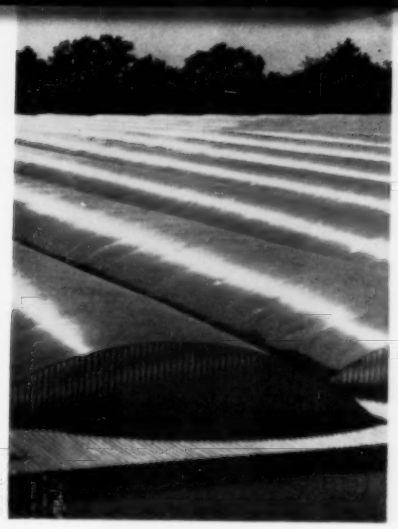
A sudden rise in the coliform bacteria content of the water led to the roofing project. An investigation showed that the reservoir had not been cleaned in 50 years and it looked it. The only barrier to the open basin consisted of a waist-high wood fence at the very edge and even portions of this fence had fallen into the water.

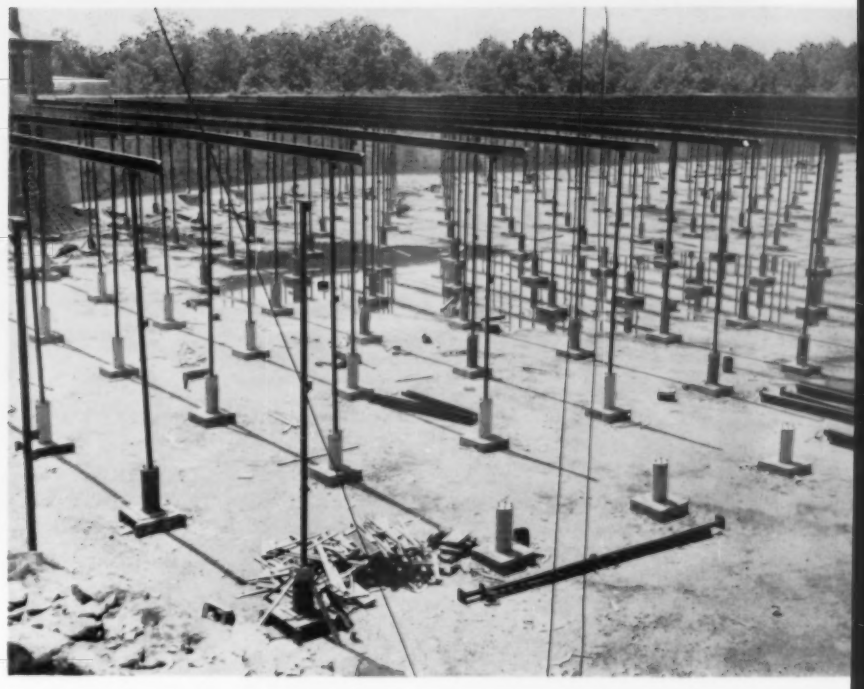
A top-to-bottom cleanout and repair job was in order. To do this the city floated a $400,000 bond issue. In this case, financing the work was the easiest part; the big problem was doing without the reservoir for several months, since it is the only storage facility floating on the distribution system. To solve this and other problems, the city retained Charles A. Maguire & Associates, consulting engineers of Providence, Rhode Island.

Our engineers proposed a 3,000,000-gallon auxiliary standpipe to serve in place of the reservoir while work was in progress, and to supplement it thereafter. This would be erected adjacent to the large reservoir with the tops at the same elevation.

With the average demand at 15 mgd and with peaks in excess of 30 mgd, only 3,000,000 gallons floating on the system would mean close scheduling. However, we felt that, by "jockeying" in various combinations the system's 16-mgd steam pump and the three electric pumps of 5 mgd, 9 mgd and 12 mgd capacity, pumping could be kept very

A wide variety of debris begins to show as the last of the water drains out of Pawtucket's Stump Hill reservoir.





While one contractor installed the 398 roof supports, a second contractor sealed the interior of the reservoir with gunite.

close to the actual demand of the communities concerned.

Maguire & Associates also recommended the use of the low-cost aluminum roof for the reservoir to keep within our budget. This was an unexpected bonus for concrete steel and other heavy-duty roofs were out of the question in the $400,000 budget available.

By April 1959, the auxiliary tank was completed and we were ready to begin the "juggling act." Superintendent of Water Distribution Raymond W. Anderson carefully briefed every man in the department on the critical nature of the situation, pointing out that every precaution should be taken lest the city be without water.

Two 24-inch parallel lines running up Stump Hill permitted, after some complex planning, the switch to the standpipe and the draining of the reservoir.

As soon as the new tank went into service, we drained the reservoir into a pond at the foot of the hill and started the task of cleaning. The exposed bottom revealed tin cans, bottles, an old stove, leaves, paper and other debris, plus several inches of silt. It took a street sweeper and a front-end loader, lowered down the 21-foot walls by crane, several days to clean out this accumulation.

As soon as the cleaning job was complete, the A. L. A. Construction Co. of Cranston, R. I., began installation of the 398 concrete-filled pedestals on the reservoir floor as part of the $187,700 roofing contract. These were topped with steel piers, varying in height to give a slight pitch to the roof. Meanwhile the National Gunite Corporation sealed the inside of the masonry walls at a cost of approximately $18,000.

Within eight weeks after it was drained and before the really hot weather arrived the reservoir was refilled. It remained out of service but the water was there if needed.

Roof Arches

Men of the Elwin G. Smith Co. of Pittsburgh worked over water to install the aluminum, using small boats when necessary. On hot days the aluminum reflected most of the heat, making it more comfortable beneath the roof than on top of it. This same effect will reduce considerably the evaporation loss.

The roof arches, which need no support, are made up of Kaiser corrugated 0.032-inch alloy Alclad 3004. Each 16½-foot sheet spans 15 feet, the edges resting on flanged beams. Gutters between the arches were grouted with cement and sealed with hot asphalt roofing material. Since aluminum has a tendency to corrode when in contact with steel or concrete, all such spots were thickly coated with bituminous paint. All steel surfaces received two coats of coal-tar base paint.

Despite its thinness, the corrugated aluminum arches can easily support 30 pounds per square foot, sufficient to permit walking on it for inspection and repair. Exclusive of fencing, walkways and other incidentals, the 130,000-square-foot structure cost $1.34 per square foot.

We placed the reservoir back into service on September 16, 1959. During the 4½ months of using only the 3,000,000-gallon auxiliary reservoir, only one incident took place, and that was a case of too much water. One Sunday morning members of a local lawn-bowling club situated at the foot of Stump Hill arrived for a match to find their bowling lawn under several inches of water. The pumping station crew had let the steel tank overflow. The knowledge that our big reservoir would soon be protected by a roof was more than enough to compensate for the temporary wrath of the lawn bowlers. ◄◄

The service counter seen from the cashier's position; it can be handled by two persons in addition to the cashier. Beverage is self-service; the grill in back permits handling special orders without slowing down the line.

Orlando, Fla., municipal building provides . . .

City-Employee Cafeteria

By E. GLENN HENNIG*
Director of
Public Services

The employees' cafeteria in the new city hall at Orlando, Fla., involved several factors that make it different from most in-plant feeding operations. Since it is supported by taxpayers' money, it has to operate at a "break-even" figure. It must not be "unfair" competition to existing downtown restaurants. It has to be readily accessible to the building employees but closed to the public visiting the building. Finally, it must be equally acceptable to Mayor Bob Carr and the City Council, to the largely feminine staff, and to the men from the outlying departments, including garage and sanitation.

The top responsible executive is William Stewart. In direct charge is an experienced cafeteria manager. She has the standing and salary of a "section chief" in municipal forces.

* Mr. Hennig was formerly City Assessor in Orlando and, while holding that position, was responsible for the development of the city cafeteria. He was recently promoted to his present post.

There are 173 employees working at city hall, a number of whom still go home for lunch. Also 12 to 18 members of outlying departments have business in the building around lunch time on an average day. The cafeteria serves full luncheons at the present time to close to 100 persons daily, increasing to 115 or 120 on rainy days. The number of lunches is still increasing slowly each month.

From 20 to 30 people bring their own lunches to the cafeteria. They usually buy a beverage, soup, dessert or candy bar. Practically all employees come at least once a day for a coffee break.

Breakfasts

A few heavy breakfasts are served before 8 a.m. and a dozen light breakfasts. Coffee, rolls and orange juice or tomato juice go fast on the morning breaks. The dozen or so leftover desserts are usually cleaned out on the afternoon coffee break.

Two or three "buffet" dinners for special groups, such as the credit union, have been successfully given in the evening. These are not encouraged because of the extra hours for the crew. They must be arranged directly between the group spokesmen and the cafeteria staff.

The regular luncheon offered is in moderate portions geared to the sedentary-worker appetite. For those wishing a heavier meal, frozen steaks, chops or other meat portions are always available, to be grilled in a very few minutes. These are not posted on the daily menu, but if an employee hesitates at the steam table, the attendant quickly suggests one of the cook-to-order items.

Wage costs run 27% of gross sales. Cafeteria employees are on the city payroll, which gives them a little more than the going wage rates in local restaurants. They are eligible for pensions and for membership in the credit union. Hours in their five-day week are from 7:30 a.m. to 4:30 p.m.

The manager's staff includes a cook, a salad-and-sandwich girl, and a dishwasher-bus girl. Another girl, who cleans offices during the rest of the day, is on standby.

Bus-girls are supplied as part of the effort to make the cafeteria as appealing as possible. It was felt office girls may subconsciously reject "bussing" their own dishes, lest they spot their clothing. From a sanitation viewpoint, Mr. Stewart

The manager accepts meal tickets only, except in special circumstances. Bought in the tax collector's office, these tickets bar the public from the cafeteria.

A typical day's menu, shown by Mr. Hennig, includes three filling entrees and a choice of vegetables. There is always a soup-and-sandwich combination, the most popular single item. Prices are not subsidized and equal those at the more modest downtown restaurants.

feels someone should frequently make rounds of the tables to make certain that they are clean. Besides, the location of the elevators made it impossible to provide a soiled-tray window that wouldn't create conflicting traffic.

Informal staff meetings with all cafeteria personnel are held at least once a week, usually just before quitting time. After the group meeting the manager and cook usually remain for further consultation.

The cafeteria manager does all the planning and buying. Because the operation is comparatively small she follows the supermarket ads and often gets better buys at supermarket sales than through jobbers. The food costs are now running slightly over 50%.

Equipment for the cafeteria cost $18,000. Since nothing is depreciated in municipal accounting, this was charged as a lump sum cost. However, 10% of revenue from the cafeteria is budgeted for maintenance, repairs and replacement of equipment. If the equipment were being depreciated, the cafeteria would be breaking even or slightly better at the end of its first year in September.

As the two upper floors of the building fill up, the cafeteria is expected to show a slight profit. It has all the equipment necessary to handle this 30% added volume and probably could get by with one more employee comfortably at that time.

Two factors prevent the public from dining in the cafeteria. First, the facilities are on the roof of the seven-story building. The cafeteria is not listed on the bulletin board in the lobby. The elevator controls show only an eighth floor.

Secondly, employees pay for meals by ticket. The manager, as cashier, is not supposed to accept cash. Tickets are bought at the tax collector's office in books of $3, $5 or $10.

Guests

Employees are permitted, even encouraged, to bring guests into the cafeteria but must pay for their meals with tickets. Cigarette and soft drink machines in the dining room point up another benefit of the penthouse location. It holds down traffic through the lobby. It also spreads the load in the elevators, since passengers from the street thin out as the cafeteria-bound groups build up. This is less important now than it will be when the city hall fills the two upper floors provided for expansion.

A phone extension from the city hall switchboard is in the dining area, in a wall niche the size of a conventional phone booth. It is answered by whoever is handy and enables personnel who are on a coffee break to keep in touch with their offices.

However, the most important benefit arising out of the city hall cafeteria, says Mayor Bob Carr, has been the boost in morale. The departments had been scattered all over downtown Orlando. They tended to be separate cliques with a general indifference towards all other departments. But here personnel from all departments mingle in the cafeteria and get to know each other personally. Inter-departmental frictions have melted away over the coffee cups.

Not the least of this has been having meals or coffee in the same room with the mayor, council and department heads. After the initial shyness wore off, esprit de corps and a sense of common purpose began to grow that augurs well for Orlando's number one public servant —City Hall! ◄◄

Stump Removal

. . . wins public good will and adds beauty to Appleton, Wis.

By EDWIN DUSZYNSKI*
Director of Public Works

Appleton, with a population of about 48,000, instituted a stump-removal program strictly as a public relations activity. During the first four months of operation, July through October 1959, we learned two things. First, if handled properly, this business of removing stumps can be accomplished quickly, satisfactorily and economically. Secondly, the results in public good will and better-appearing streets is well worth the small cost involved. Other benefits add to the program's value.

For many years the Public Works Department did offer some assistance to property owners faced with the problem of removing stumps along the parkway or boulevard strip between the street curb and sidewalk. This consisted of lifting out the stump and hauling it away after the property owner had excavated around and under the stump and cut enough of the roots for easy removal. We made no charge for this service.

Over the years many trees in the parkway had been cut down for various reasons. In most cases a chain saw had been used, with the cut made as close to the ground as possible. Only a few people undertook the task of digging out the remaining stump. Others resorted to whittling away at the stump with an axe, burning it from the top down, or drilling holes in the stump and applying chemicals to accelerate disintegration. Seldom did these methods result in a satisfactory job, and in most cases the stump was left intact to mar the appearance of the parkway.

Aldermen Investigate

In view of the interest of abutting property owners in improving the parkway strip, which is part of the street right-of-way, several aldermen felt that the city should take some action. The expenditure of city funds was justified in that the work would be on city property.

Research revealed that others had tried many types of stump removal equipment but a Vermeer stump cutter showed the most promise. On a trial basis we hired two retired city employees of an adjacent city who owned such a machine and were engaged in the stump-removal business. These men went to work on several troublesome stumps while several aldermen watched the operation. At the next budget time, these alderman provided the impetus to include funds for the purchase of such a machine: in June 1959 we purchased a Vermeer Pow-R-Stump Cutter.

Our unit is capable of cutting a stump ten inches below the level upon which the tires rest. A larger machine is available that will cut 18 inches below grade. With either machine the cut below actual grade can be extended by excavating around the stump to permit the machine's wheels to be placed at a lower elevation.

The unit, mounted on two pneumatic tires, consists primarily of an air-cooled gasoline engine supplying power to operate a cutting wheel and hydraulic pump. The pump provides pressure for hydraulic movement of the cutting wheel either horizontally or vertically.

We use a Willys Jeep to tow

* Mr. Duszynski has served as Director of Public Works for the City of Appleton since 1954 and prior to that held the same position in Cudahy, Wis.

A two-man crew permits the operator to concentrate on the cutting operation. The second man keeps spectators at a safe distance and cleans up after cutting is completed.

This view, taken with the shield raised, shows the cutting wheel completing a pass across the stump. The unit may be lowered to cut the stump to a point ten inches below grade.

the unit, and find that this combination is more maneuverable than a large truck or pick-up. A dump truck is also included with the crew, which consists of two men. The operator concentrates on the cutting operation while the second man keeps spectators from getting too close. Even with the screen and canvas sides, there is some flying debris. The second man takes over after the actual cutting operation to level off the area and hand shovel excess dirt and chips into the dump truck.

First Four Months

The accompanying table shows what this crew accomplished during the first four months of operation. The maximum number of stumps cut on any one day was 28, and the maximum total diameter cut in one day was 723 inches. The largest stump cut measured 80 inches across.

We cut the stumps four to six inches below grade, which provides sufficient depth for top soil and lawn growth. The cut is greater where sidewalks or other street improvements are to be installed over the stump.

We attribute our high production to good equipment and close adherence to the following policy:

1. The Street Department will set up specific areas and remove stumps within an area completely before moving elsewhere except as construction may require.

2. The same man operates the unit each day. His experience enables us to get the greatest efficiency from the operation.

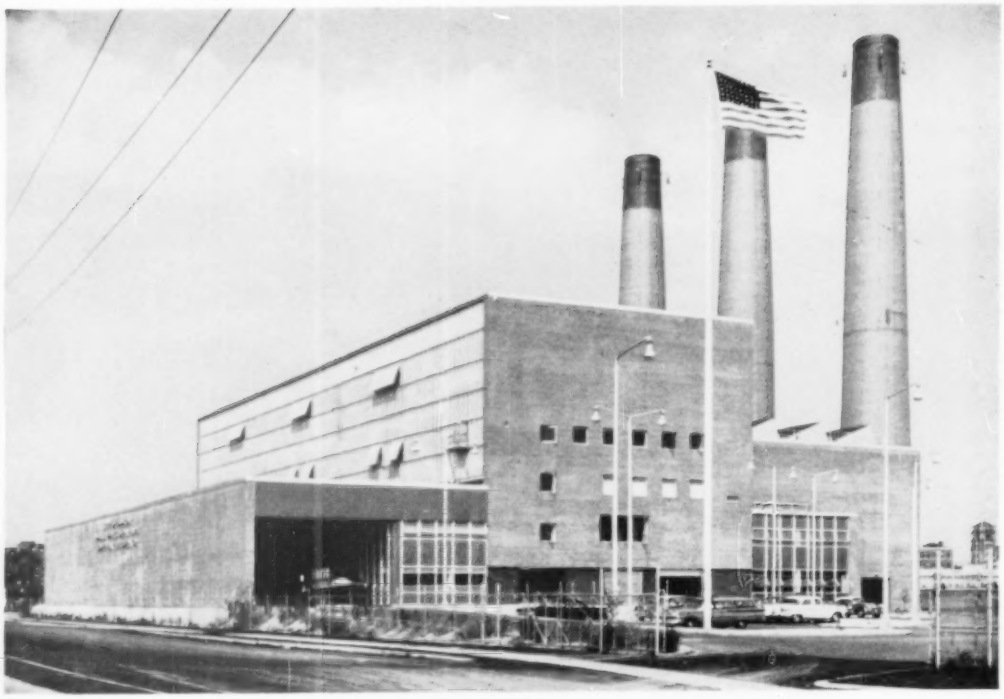
From the data in the table plus a little on maintenance cost, the reader may closely estimate the cost of similar work in his own locality. This is better than stating a given figure, for labor rates vary and some cities charge only operating costs for equipment while others include depreciation, insurance and similar items.

Daily performance, as noted from the table, averages out to approximately 14½ stumps of 30 inches in diameter. Cutter teeth last about 27 hours, and it takes approximately 45 minutes to install new teeth. The cutter teeth cost us $14.40 per set. The cost of our particular unit came to about $2,950.

Our program of stump cutting has proved to be one of the most economical means of developing public good will in Appleton. More tangible results include better parkway appearance and renewed interest in keeping up the parkway by many property owners. ◄◄

SUMMARY OF FOUR MONTHS STUMP CUTTING

Month	Days of Operation	Stumps Removed	Inch Diameter	Man Hours	Average Stumps/Days	Average Inch/Day
July	7	23½	629	116	3¼	89¾
August	8	120	3,124	134	15	390½
September	21	353	10,823	347	16¾	515¼
October	12	203	6,310	210	16¾	525¾
Total	48	699½	20,886	807	———	———



Boston's first incinerator has sufficient capacity to handle the refuse collected from about half of the city's population.

Boston's Incinerator Is a Steam Producer

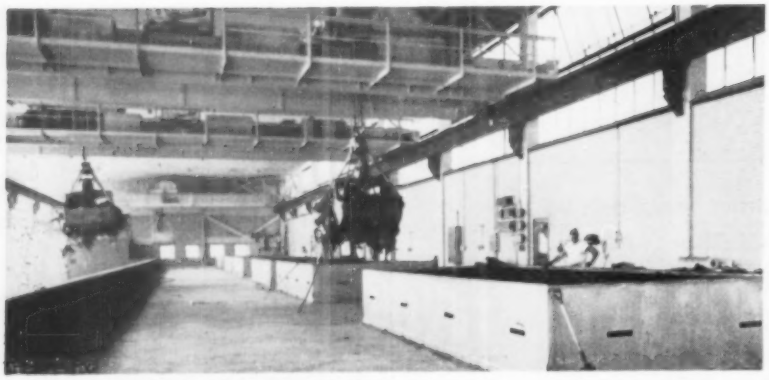
New plant replaces two dumps, ends refuse barging and supplies steam to Boston City Hospital

By JOHN F. FLAHERTY*
Division Engineer

Boston's new happy dumping ground is a 900-ton-per-day incinerator, the first in the city's history. The South Bay plant, named after the section in which it is located, serves about one third of the city's area and about half of its population, some 360,000 persons. Several factors influenced the selection of the South Bay area: it is an unrestricted zone, is centrally located with respect to refuse hauling, and is close enough to city facilities for effective waste-heat utilization.

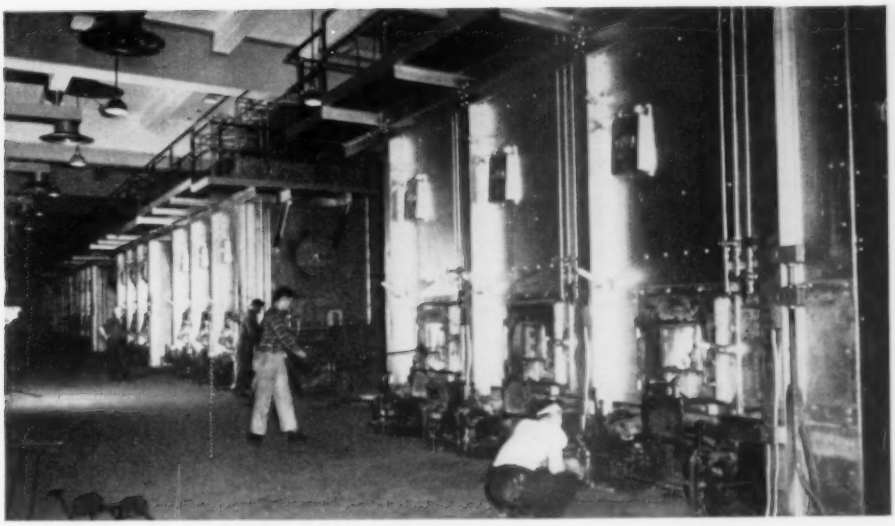
The last consideration, waste-heat utilization, plays an important part in the economics of operation. By using waste heat for the generation of steam and piping it to nearby Boston City Hospital, we will reduce the city's fuel and power bill by at least $115,000 annually.

When construction of the incinerator was recommended in 1951,



Three overhead cranes transfer refuse from the storage pit to the six charging hoppers.

* As Division Engineer, Sanitary Division, Boston Public Works Department, Mr. Flaherty holds direct responsibility for the construction and operation of the incinerator.



Each bank of two furnaces supplies heat to a 75,000-pound-per-hour steam boiler.

cost estimates indicated that the adoption of this method of disposal would save the city some $357,000 per year over existing methods. However, a reduction of $199,000 per year in the disposal contract price since that time, plus increased construction and operating costs, wiped out the anticipated savings to the point where both methods were about equal. However, incineration still has the advantage of eliminating two open dumps and the barging of refuse in Boston Harbor.

The plant comprises six 150-ton-per-day rectangular furnaces equipped with Flynn & Emrich mechanical stoking grates each with an area of 207 square feet. The furnaces are divided into three cells having their own charging unit, ash hopper and gate. Combustion chamber volume per furnace is 2,250 cubic feet.

Steam production takes place in three Babcock & Wilcox three-drum tubular waste-heat boilers of 75,000-pounds-per-hour capacity each. They generate steam at 250-psi gauge. Two furnaces serve one boiler, thus the plant consists of three similar steam-producing units (see the accompanying sketch).

For fly-ash control the installa-

(A) *Chimney*

(B) *I. D. Fan*

(C) *Fly-Ash Arrestor*

(D) *Sliding Damper*

(E) *Chimney Flue*

(F) *Guillotine Damper—Refractory*

(G) *Spray-Chamber Outlet Flue*

(H) *Spray Chamber*

(I) *Boiler Breeching*

(J) *Boiler*

(K) *By-Pass Flue*

(L) *Guillotine Damper—Water-Cooled*

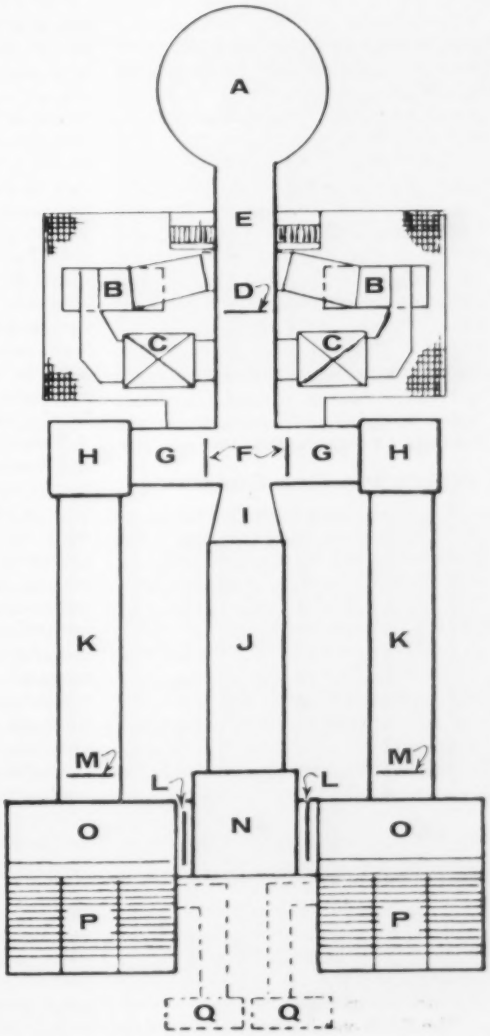
(M) *Guillotine Damper—Refractory*

(N) *Boiler Uptake*

(O) *Combustion Chamber*

(P) *Furnace (3 cells)*

(Q) *Forced-Draft Fans*



A sketch of one steam-producing unit comprising two furnaces, one waste-heat boiler and one chimney with appurtenances.

Construction of the refuse storage pit below grade permitted a ground-level dumping floor. The site area was too small for a ramp.

tion includes six Fly Ash Arrestor Corp. cyclone fly-ash arrestors, plus a spray cooling system in the by-pass flues to cool the gases when the waste-heat boilers are not in use.

The forced- and induced-draft fans each have capacities of 17,650 cfm and 53,418 cfm respectively, and are steam-turbine driven. Sufficient steam-driven auxiliary equipment has been provided so that steam generation can be accomplished in case of power failure.

A 175-foot-high-by-10½-foot-inside-diameter chimney serves each pair of furnaces. These chimneys have complete self-supported refractory linings to the top.

Where the Gas Goes

The flow of gas from the furnaces and combustion chambers normally passes through the waste-heat boilers, fly-ash arrestors, and induced-draft fans into the chimneys. A by-pass flue from each furnace permits the gases to bypass the boilers when they are not needed or require cleaning. When the bypasses are in use, the gases may be cooled in the spray chamber before entering the fly-ash arrestors and the induced-draft fans.

Oil burners have been installed in the furnace chambers to aid in burning the refuse or maintaining proper temperatures for deodorizing the gases. In addition, each boiler is equipped with four Peabody oil burners to permit steam generation when the refuse furnaces are not in operation.

The 5,000-yard-capacity receiving bin is 200 feet long by 24 feet wide by 30 feet deep. Because the site was so small as to rule out the use of ramps, the bin had to be below ground, requiring an excavation 30 feet deep and about 24 feet below ground-water level. Like the rest of the building, the bin is supported by pile foundations and is tied to the piles to overcome flotation. To help resist buoyancy, it was filled with water after its completion and prior to construction of the building. The 66-foot-high bin wall opposite the truck unloading side is completely armored with steel plate welded to I beams placed in the concrete wall.

Three five-ton Manning Maxwell & Moore Shaw-Box cranes with three-yard buckets span the 67-foot width of the bin and charging floor. Charging of the furnaces is controlled by means of hydraulically operated charging gates with water-cooled throats located at the bottom of the charging hoppers. The ash-dumping gates are manually operated.

All incoming refuse is weighed on a Howe dial scale located at the entrance to the dumping floor.

Foxboro and Brown (Minneapolis-Honeywell) instruments record temperatures, drafts and other pertinent data on panels on the operating floor.

A 241-foot-long-by-200-foot-wide building houses the incineration and steam producing facilities as well as office and shop space, shower, locker and eating facilities for the employees.

A 1,700-foot-long, 12-inch-diameter underground steam line runs from the incinerator to the Boston City Hospital, primary user of the steam generated. A connection may be made later with the Boston Edison steam system permitting the sale of surplus steam. Small amounts of steam will also be used for certain auxiliaries in the incinerator building. The hospital's average yearly demand approximates 45,000 pounds per hour with a maximum demand of 150,000 pounds of steam per hour.

Numerous Contracts

The project, completed under the direction of Commissioner of Public Works Robert P. Shea and the author, was designed by the Boston firm of Metcalf & Eddy. The total cost, including land and engineering, came to a total of approximately $5,590,000.

The five basic contracts were as follows:

Pile driving. This was started in December 1956 and the job was completed May 1957. Cost: $419,000 for 443 12-inch concrete-filled pipe piles averaging 165 feet in length. Contractor—J. F. White Contracting Co.

Refuse storage bin. Started in June 1957 and completed in January 1958 by Coleman Bros. Corp. at a cost of $412,000.

Building. Erected by John Bowen Co. Inc., at a cost of $2,694,000. Work started in January 1958 and the building was completed in August 1959.

The equipment contract for the furnaces, boilers, fly-ash arrestors and related units went to Tynan Incinerator Company of New York at a cost of $1,425,000.

The steam main from the incinerator to the hospital was installed by M. DeMatteo Construction Co. at a cost of $149,600. Work started in May 1959 and was completed in December.

Plant operation is under the direction of Plant Superintendent John J. King. The incinerator portion operates three shifts a day, 5½ days per week, while the power plant (steam) operates seven days per week. The total operating crew comprises 90 men plus the superintendent.

Preliminary estimates set the operating cost, including amortization and maintenance and deducting estimated income, at $783,000 per year. The cost of disposal under former methods, plus the cost of operating the hospital steam-generating plant, amounted to a total of $784,000 per year. ◄◄

The new Kern County Court House in Bakersfield, Calif.

Deputy Sheriff Edward D. Taylor dictating in privacy.

Better Sheriff's Reports Speed Kern County Law

By **LE ROY F. GAYLEN**
Kern County Sheriff
Bakersfield, Calif.

We have found here in Kern County that it is not only more efficient to furnish our officers with dictating facilities, but their better reports help the District Attorney to present stronger cases in court.

In the old days when officers had to hunt for a free typewriter and wrap themselves around it, their reports were short and inclined to be awkward, which is hardly surprising. Last year, new Edison Voicewriter equipment made by McGraw-Edison Co., West Orange, N. J., shone conspicuously in the gathering of evidence — evidence which resulted in the trial and conviction of narcotics peddlers. The District Attorney was able to obtain 58 convictions out of 60 indictments which is far better than former results.

We started with portable recorders in July 1957, when we had one recorder and one transcriber in a single room. Each officer went to that room to make his report.

From the heavy traffic on this machine, it was soon evident that an expansion of the system was needed. In May 1959, when we moved to our new building we installed two remote controlled phone network recorders, and hired three transcribers, one girl for each shift, around the clock. We ran Televoice lines to 15 outlets in adjacent rooms where officers could have some privacy in dictating their reports. These outlets were made available to everybody in the Criminal Division.

We installed a Voicewriter at the switchboard in the sheriff's office to monitor all calls. As soon as the operator answers the call, she switches on the recorder. If it's a vital call, she allows the recorder to pick up the whole conversation. If it's a non-vital call, the telephone operator switches off the recorder immediately.

This system not only verifies the words of the in-coming voice but also records the qualities of the voice itself. Not long ago a woman called the Sheriff's office and reported: "There's a bomb at East High School!" Investigating officers immediately acted on the tip and ordered East High School evacuated until a search could be made. No bomb was found. But by playing back the voice, we were able to identify the voice and eventually to bring in for investigation the person who had made the call. She finally confessed making the call.

We don't transcribe all these telephone conversations; but we file them for future reference. Incidentally, our Fire Department, too, maintains a recorder for "panic" purposes. Before going out on a phone call, they check and double-check the information after the person has hung up, reducing to a minimum the chance of going to a wrong address. ◄◄

The Voicewriter at the switchboard in the sheriff's office monitors all calls; Mrs. Beverly G. Woods is on duty.

Mrs. Norma J. Murley transcribing.

The Sheboygan water plant is favored by a shore-front spot on the edge of Lake Michigan. The left part of the building houses new filters; the concrete structure at the right is the new slow-mix and settling basin.

"Water Is Free"

. . . nevertheless Sheboygan, Wis., has increased its water-works investment by $1½ million to provide a safe water in greater quantity

By **JEROME C. ZUFELT*** Superintendent

"Water is free, you pay for safety and delivery." This statement definitely applies to the people of Sheboygan, for we have an inexhaustible supply at our door step—Lake Michigan. But making sure it is safe and getting it to the consumer is another matter. To serve properly the 45,000 people living in Sheboygan, plus another 3,000 persons residing in nearby Sheboygan Falls, we invested approximately $1,500,000, bringing our total capital investment to $4,700,000. To do this we found it necessary to issue bonds and increase water rates about 45% overall.

The additions affect all parts of the system; from a new intake to increased storage in the distribution system. Overall capacity has been increased from 18 mgd to 24 mgd, distribution storage stepped up by 2,000,000 gallons, and the system strengthened to carry more water to satisfy the ever-growing demand.

Third Intake

Our new 36-inch-diameter reinforced-concrete intake extends into the lake 2,100 feet, terminating in 27 feet of water. It supplements two existing intakes; one constructed in 1909 that is 30 inches in diameter and 5,000 feet long, and one built about 1900 that is 20 inches in diameter and 1,800 feet long. They have a combined capacity of over 50 mgd.

A new 12-mgd Allis-Chalmers low-lift pump brings our raw-water pumps to four. It is powered by a 150-hp motor and operates against a 60-foot head. The three older units consist of one 8-mgd and one 12-mgd pump, electric-motor driven, and a gasoline-engine-powered 12-mgd unit.

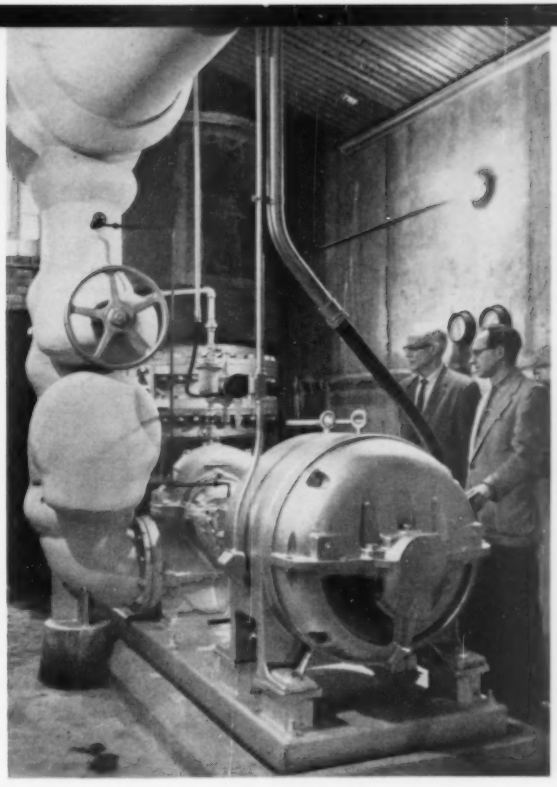
No additions were needed to handle high-service pumping. We have two De Laval pumps rated at 10 mgd and 8 mgd at 220-foot head and two Worthington pumps rated at 10 mgd and 7 mgd at 200-foot head. Two are powered by Electric Machinery motors, one by a Climax gasoline engine and one by either an EM motor or a Climax engine.

The gasoline engines take over pumping duties during periods of power failure and a gasoline-engine-powered 50-kva generator supplies electric current for other needs at the plant.

Doubling the capacity of our sedimentation facilities actually increased detention time, for overall plant capacity was increased from 18 mgd to 24 mgd. The new settling basin, exclusive of the slow-mix portion, has a capacity of two million gallons. It consists of a two-level design divided into two sec-

* Mr. Zufelt, the Superintendent of the Board of Water Commissioners, Sheboygan, Wis., served as a Director of AWWA from 1955-1958 and received the Association's Fuller Award in 1948.

A new 2,000,000-gallon standpipe increases the storage floating on the system by 50%.



The author (left) and Plant Superintendent Roger Lieding now have a new wash-water pump to help boost the effectiveness of the existing wash-water tank.

tions longitudinally so that it is possible to take only half of the tank out of service at a time. Using both the old and new facilities, with half the flow going through each, detention time and velocity of flow is as follows:

Rate (mgd)	Detention Time (hours)	Velocity (feet/minute)
8	12	0.5
12	8	0.67
24	4	1.33

Detention time in the slow-mix basins at 8 mgd, 12 mgd and 24 mgd is 1½ hours, 1 hour and ½ hour respectively.

Raw water flows to a new rapid-mix basin where liquid alum is added by means of two Infilco feeders. The water enters the tank at the bottom and flows over a splitter weir which under normal conditions divides the flow in half. One portion goes through the new flocculation and sedimentation basins and the other portion flows through the existing units. The slow-mix units in the new basins, set in series with two mixers in each half of the tank, and the rapid-mix machinery are all Walker Process equipment.

The settling tanks contain no mechanical equipment, but are drained and flushed semi-annually.

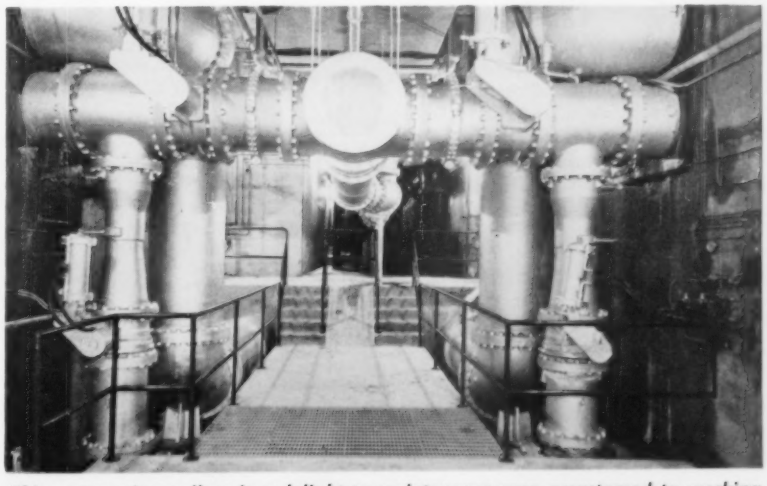
Dry chemicals used as needed include carbon and sodium fluoride fed with Builders-Providence chemical feeders and Bentonite and alum fed with Infilco feeders. (Although we now use liquid alum, we retained the dry chemical feed equipment.)

Three Wallace & Tiernan chlorinators handle pre- and post-chlorination. Ton containers are used to supply the feeders.

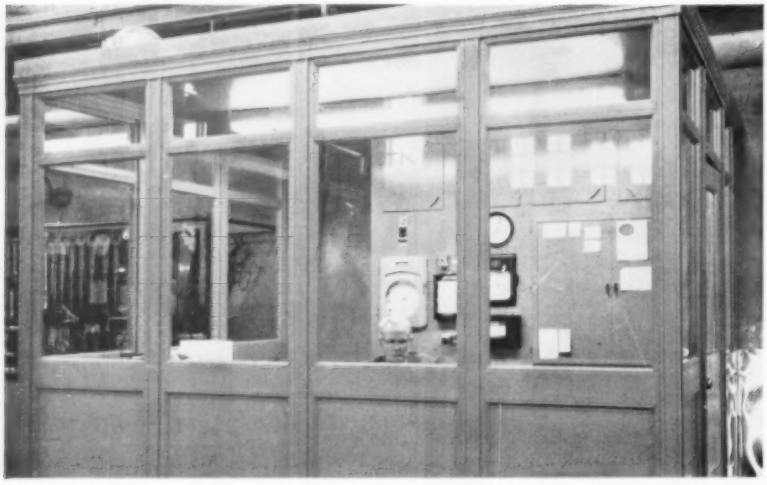
Larger Filters

Our nine existing filters, built at two different periods, are rated at 2 mgd each. The two newly completed units have a capacity of 3 mgd each. Equipment includes Darling-Pelton butterfly valves, Simplex rate-of-flow controllers and operating tables, and Palmer surface washers. Two of the four surface wash units in each filter are of the new S-type but the filters have not been in service long enough to make a fair comparison between them and the straight-arm model.

A 300,000-gallon clearwell was placed under one filter only and serves chiefly as a suction well for the wash-water pump. It is connected to the existing clearwell,



This roomy pipe gallery is a delight to maintenance men accustomed to working in the tight quarters of the older part of the plant.



Two "cages," one in the high-service pump room and the other in the filter gallery provide comfortable working conditions for the operating personnel.

giving us a total capacity of approximately 3,000,000 gallons.

For filter washing we still use our old wash-water tank, but also use a pump during part of the wash. The pump, an Allis-Chalmers unit rated at 5,215 gpm at 55-foot head and driven by a 100-hp motor, automatically turns on when the water level in the wash-water tank drops two feet below the set full level. The pump discharge then supplements flow from the tank during the wash period. After the wash cycle it continues to operate until the tank has been refilled.

Basic instrumentation includes high-service discharge metering by a Venturi tube and a Simplex meter on each of the three transmission mains leaving the plant, and Builders-Providence equipment to indicate and record clearwell water depth, flow from wash-water tank, raw-water intake, and water depth in the new standpipe.

Additions to the distribution system consist of new feeder mains and more storage. The new mains required 730 feet of 24-inch, 6,970 feet of 16-inch and 4,890 feet of 12-inch cast-iron pipe and 3,520 feet of 20-inch prestressed-concrete pipe. The 2,000,000-gallon standpipe, erected by the Graver Tank and Manufacturing Company, is 60 feet in diameter, 100 feet high to the water level (top) and 108 feet to the crown.

Two firms handled the engineering work. Jerry Donahue Engineering Company of Sheboygan took charge of the main work and standpipe and Alvord, Burdick & Howsan of Chicago designed the plant additions.

Cost data breaks down as follows:

1. **Alteration of piping out of the pump station, done by our own crews —$17,000.**
2. **Feeder mains—$217,000**
3. **Standpipe foundation—$33,000.**
4. **Standpipe—$95,800.**
5. **Intake—$223,000.**
6. **Plant—$714,000.**

The costs listed are exclusive of engineering.

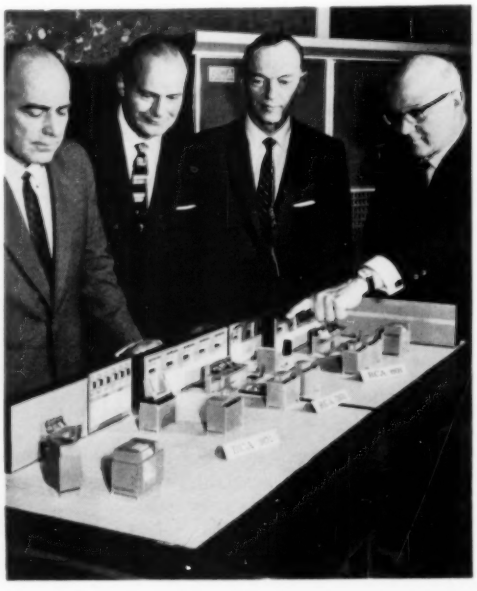
No project of this kind can be carried out without the full cooperation of all department employees as well as the Board of Water Commissioners and various city officials, and all deserve due credit. However, Roger W. Lieding, plant superintendent, and Joseph Eggebeen, chief operating engineer and supervisor of entire plant maintenance, are deserving of special mention. Through their efforts many problems were either avoided or solved with minimum effort. ◄

New Data Processing Systems

With the introduction of two new electronic data processing systems on April 13, Radio Corporation of America now offers a complete range of electronic computer service.

The two new systems announced by John L. Burns, President of RCA, will provide all-transistorized computer service for companies and for cities with as few as 300 employees to the biggest. "These new systems," said Mr. Burns, "bring the electronic handling of paperwork to a point of development unheard of a few years ago. They hasten the day when the computer will do repetitive clerical chores."

The compact 301 system, he said, is designed to provide full-scale data processing for smaller organizations. It uses magnetic discs or records for its memory storehouse, and can also use magnetic tape or reels. Its rental will range up to $9,000 per month. ◄◄



Models of three all-transistorized electronic data-processing systems are examined by John L. Burns (right), president of RCA, and (left to right) John E. Johnson, vice-president, marketing; Donald H. Kunsman, vice-president and general manager, electronic data processing division; and T. A. Smith, executive vice-president, industrial electronic products.

One man with the fork-lift makes easy, fast work of a job that two men would find slow and laborious.

Park Maintenance Dollars

. . . that are stretching manpower use in Glendale, Calif.

By C. E. PERKINS
City Manager

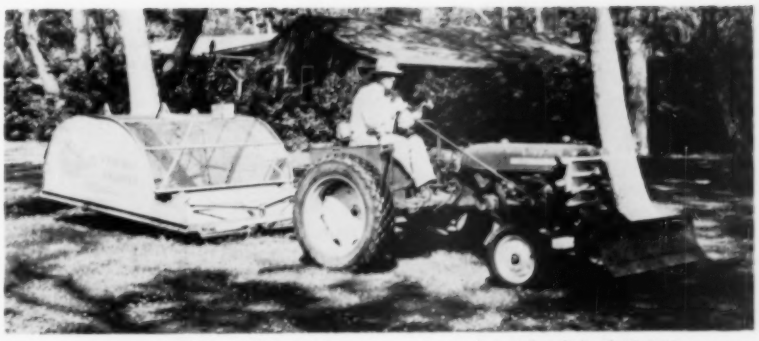
The big trouble with park maintenance "gimmicks" is that Mr. and Mrs. Average Citizen are rarely aware of these resourceful ideas, generated by the ingenuity of the park maintenance men themselves. However, we on the administrative level are well aware of them, and can measure in cold, hard cash and man-hours the substantial savings that they produce.

Take the simple example of lawn sweeping. Glendale will save $42,000 every year by purchasing one Parker Springfield mechanized sweeper and five hand sweepers. Using them, our park crews can clean the city's 84 acres of park lawns in 1,680 man-hours, compared with 20,580 required if the same cleaning were done by hand methods used previously.

Take another example—powered lawn edgers. These little machines are saving us $9,600 each year by increasing our work volume per man tenfold.

We have automatic sprinkler controllers at seven of our parks. These save us 1,220 man days, or $24,400

Hydraulic tailgates make hard work for two men easy for one.



This mechanized sweeper is saving Glendale $65,000 a year.

per year by providing automatic night-time watering, thus eliminating all hand watering. As an extra bonus, the night-time watering permits us to make the park available for public use for 16 hours per day. The cost of the controllers is negligible, $300 to $900 per park, when compared with the savings which continue year after year.

Lawn Rolling

Most would never notice the recent introduction of mechanized, rather than hand, lawn rolling of the bowling green at the Adult Recreation Center. This change not only eliminates personnel injuries formerly experienced and produces a better job of lawn rolling, but also saves about 312 man-hours per year, or $624.

Another improvement whose value is hard to measure is the fork lift that Equipment Operator Anton R. Freezon installed on the Ford-Ferguson tractor. The cost is negligible. Yet with it one man can move picnic tables and other similar objects that formerly required two to six men and a pickup truck.

Little ideas like equipping maintenance trucks with complete tool and supply boxes go a long way toward saving us money. With these on the trucks, we no longer face the costly practice of returning to the main yards for more tools and supplies.

Hydraulic gates on our maintenance trucks have reduced various two-man operations by half. Our Daybreak hydraulic gates have saved us 272 man-hours per year, worth about $5,450. In addition, we have reduced personnel injuries.

Personnel

Of course, we don't always have to buy new equipment to produce these savings. The staff at our Verdugo Swim Stadium, for example, reorganized checking and personnel working schedules, lowering labor cost by 890 man-hours per year, or by $960, while improving their efficiency.

We saved $625 last year by using volunteer umpires in the Little League baseball program. We also have been able to encourage civic organizations to supply volunteer personnel and awards for various civic programs, such as Huck Finn Day, Learn to Swim Day, and have saved another $2,500 per year. Moreover it has permitted more people to participate actively in the programs and has broadened their scope.

Items like these have permitted us to expand our Adult Recreation Program and other activities and still keep costs within reasonable limits. While they aren't obvious on the surface, they are mighty vital to the programs themselves. ◄◄

Rough Treatment Proves Pipe-Coating Durability

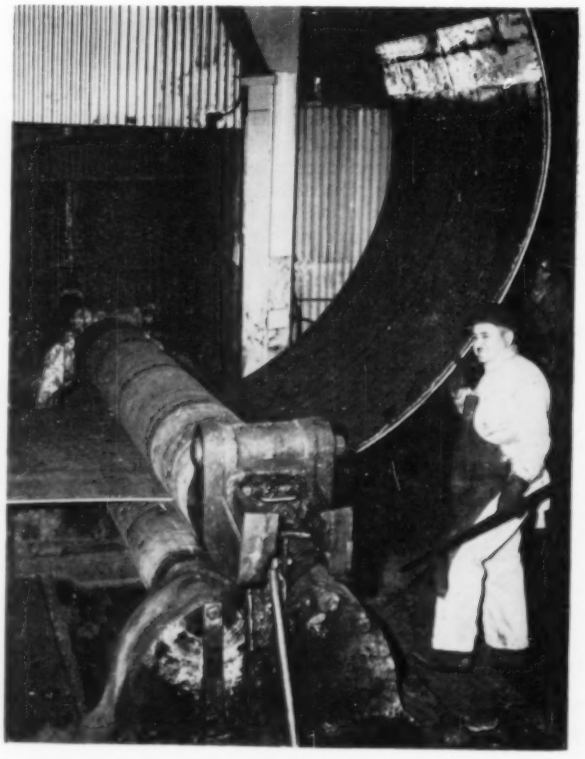
Emergency use of some 20-year-old pipe sections by the Los Angeles Department of Water and Power pointed up the durability of coal-tar enamel coatings. As a result, the coatings are continuing their useful life even after being subjected to unusual conditions.

For 19 years the pipe sections—each 10 feet in diameter and 30 feet long—lay in the open storage yards of the department. Early last year the department had emergency use for 8-foot-diameter pipe and decided to fabricate it from the larger sections. This was done by cutting out 6-foot-wide longitudinal sections and reshaping and rewelding the larger pieces into 8-foot-diameter pipe. Examination of the rebuilt pipe showed the coal-tar coatings to be in excellent shape with no re-coating necessary.

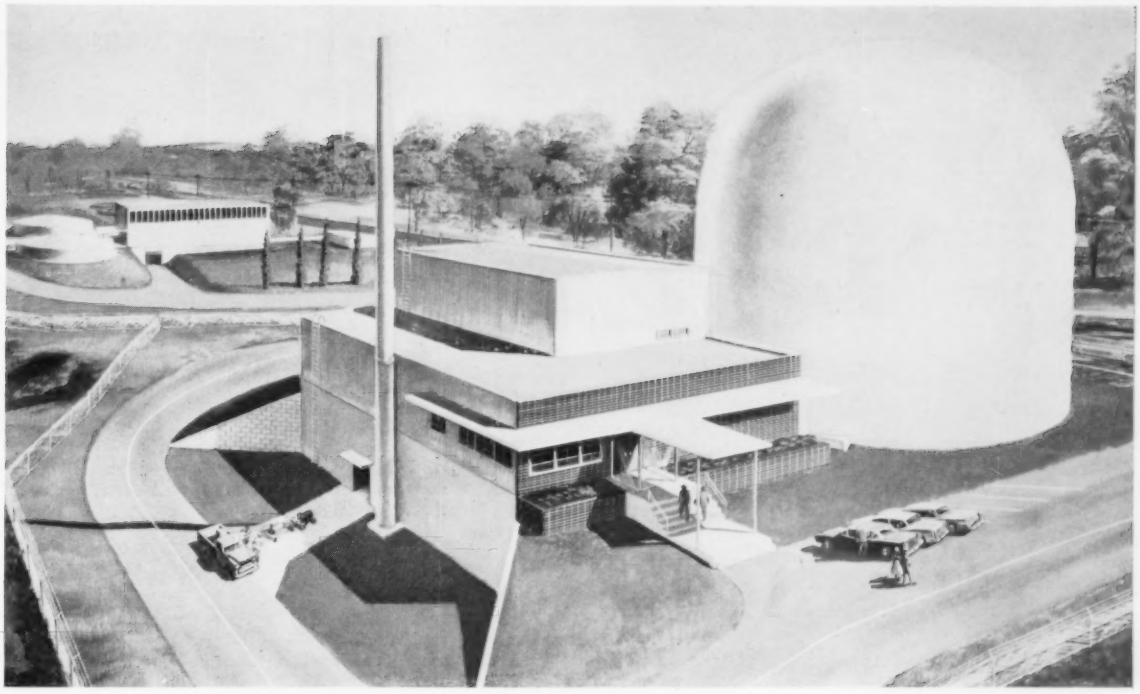
In January 1960 the department decided that the pieces cut out of the large sections were too good to be sold as scrap and ordered them flattened and then re-rolled by the Consolidated Western Steel Corporation in usable pipe sections, each 6 feet wide by 9½ feet in diameter. This meant re-rolling in the transverse direction from the original rolling of the 10-foot-diameter pipe.

Even this reworking of the steel sheets did not damage the coating extensively and, in the words of O. N. Denman, Materials Testing and Inspection Engineer for the Department of Water and Power, the coatings were still in "remarkable condition." He stated that the re-rolled sections will be placed in storage without re-coating and when needed will be touched up in places where they have been damaged in the handling and cutting.

Department records showed that the coal-tar coating was applied to the sections in the late fall of 1940 under AWWA specifications. The enamel was applied by centrifugal casting. ◄◄



Flattening and re-rolling sections from the large pipe into smaller units did not damage the coal-tar enamel coating severely, even though the rerolling was done in the transverse direction.



Piqua's power plant is less than two years away. The organic-cooled moderated reactor which will provide heat for the generation of 11,400 kw of power is located beneath the spherical dome (right) with the support equipment, control room and offices in the adjacent building.

Piqua's Atom Plant Another First

The new Piqua, Ohio, organic moderated reactor will demonstrate the technical and economic feasibility of reactors to produce in small central stations

By **R. M. HANCE, Jr.*** City Manager

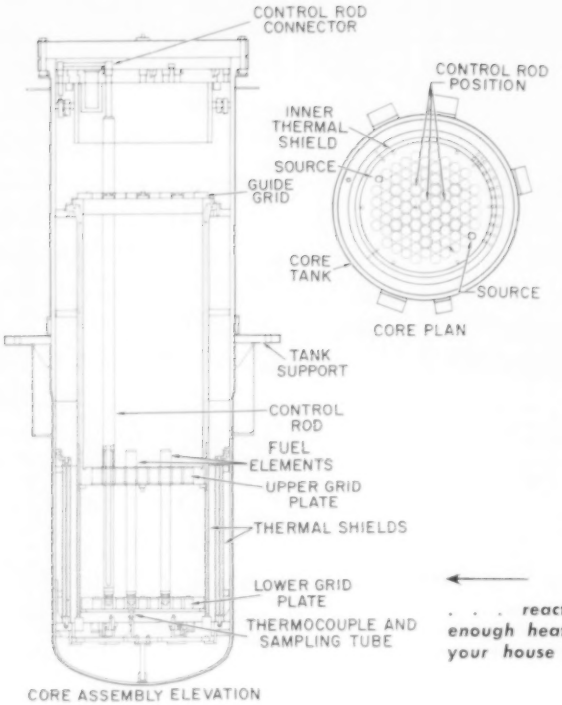
The first city to operate a nuclear reactor for production of electrical power will be Piqua, Ohio, when its new 11,400-kw, organic moderated reactor is completed in 1961. The plant, designed and built by Atomics International, a division of North American Aviation, is part of the U. S. Atomic Energy Commission's program to demonstrate the use of such reactors on the small- and medium-municipality level.

As early as five years ago, John Gallagher, Piqua's director of utilities, and the city commissioners investigated the use of a nuclear plant to supplement existing equipment. (See "Piqua to Build Nuclear Power Plant," THE AMERICAN CITY, April 1957, p. 209.) As Mr. Gallagher reported, "We just couldn't ignore the potential of atomic power. And the Atomics International unit fits our steam conditions and meets our existing pressure and temperature requirements. It's that simple."

This is not the first time that the city has investigated and accepted a new development, integrating it into its operating plant. Electrical power history was made 25 years ago when the Rural Electric Administration set its first pole in Piqua's Municipal Power Company yard. Moreover, Piqua had electricity in 1884 before either of its big brothers, Dayton and Cincinnati.

Nuclear power can assure Piqua of enough power for all future needs. One pound of uranium is potentially capable of supplying the city of Chicago for one full day, enough electrical power to operate the average home for 9,000 years.

On the other hand, Piqua's municipal plant uses 240 tons of coal—four carloads—every day to supply present needs. During peak loads, 15 tons of coal are used per hour. Be-



CORE ASSEMBLY ELEVATION

Fuel elements—there are 85 of them—will furnish superheated steam for supplementary power in the Piqua Municipal Power Plant's . . .

. . . reactor core vessel which will produce enough heat from one pound of uranium to heat your house for 9,000 years.

tween 10,000 and 15,000 tons of coal are held in reserve in storage piles.

When it was established through studies that nuclear power was practicable, the city's negotiations with the Atomic Energy Commission were completed. Piqua's 11,400-kw OMR (organic moderated reactor) will become the first to be installed by a utility, and the city will be the first municipalty to operate a nuclear reactor for the A.E.C. Scheduled for completion in 1961, it will cost the city no more than a conventionally fired boiler to produce electricity.

Piqua's contract with the A.E.C. calls for the city to operate the reactor for a period of five years, at which time the contract may be renewed for a like period—or the city can purchase the atomic furnace from the A.E.C. During the five years that Piqua will operate the unit, the city will purchase steam from the commission at the rate of 20 cents per 1,000 pounds of steam used. The subscribers' using-rate of electrical power will be no more than is presently being produced by coal-fired boilers.

The OMR plant will manufacture only the steam to turn the electrical turbine generators. Piqua's present and future electrical power requirements will not be entirely dependent upon the nuclear-energy steam plant. Boilers using distressed or cheap-grade coal will continue to use fossil fuel to generate some of the steam and the plant will have a standby coal supply on hand in the event of a reactor shutdown.

Personnel

The plant will be operated by some 25 persons. These operators and the supervisory personnel to whom they report will have sufficient training for examination and qualification for A.E.C. license, if such is required.

A health physicist will be on duty at all times to monitor radio-activity and to inspect "film-badges" and workers. Every precaution is planned to lessen chances of any form of radiation illness.

However, men standing next to the reactor will experience less radiation than they would sleeping with their luminous-dial wrist watches on. An airline pilot flying coast-to-coast in a jetliner will be subjected to more radiation from his illuminated dials than a person leaning against the outer shell of the reactor would receive in a lifetime.

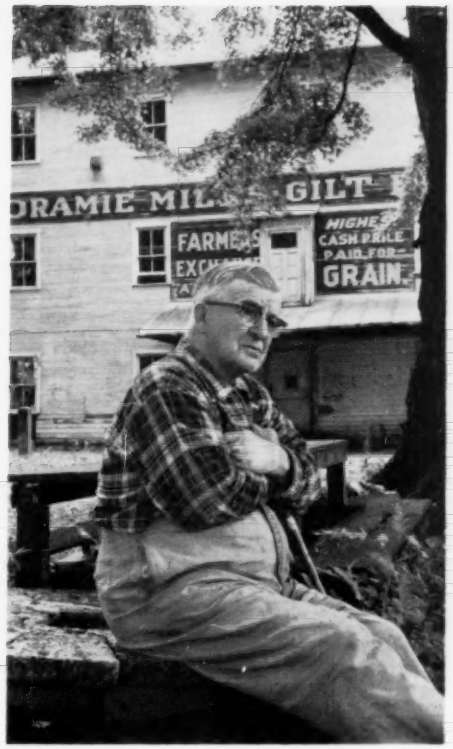
Normally, the A.E.C. avoids locating a nuclear power reactor immediately adjacent to populated areas, but the OMR is so inherently safe that an exception has been made in this case. An OMR experimental power plant was built and operated by Atomics International for the A.E.C. in Idaho, several years prior to Piqua's contractual commitments.

The organic moderated reactor vessel is made of low-carbon steel. It has an inside diameter of 7.6 feet, an over-all height of 27 feet and a wall thickness of two inches. It is designed to meet the American Society of Mechanical Engineers' code requirements for an internal pressure of 300 psia and 750°F.

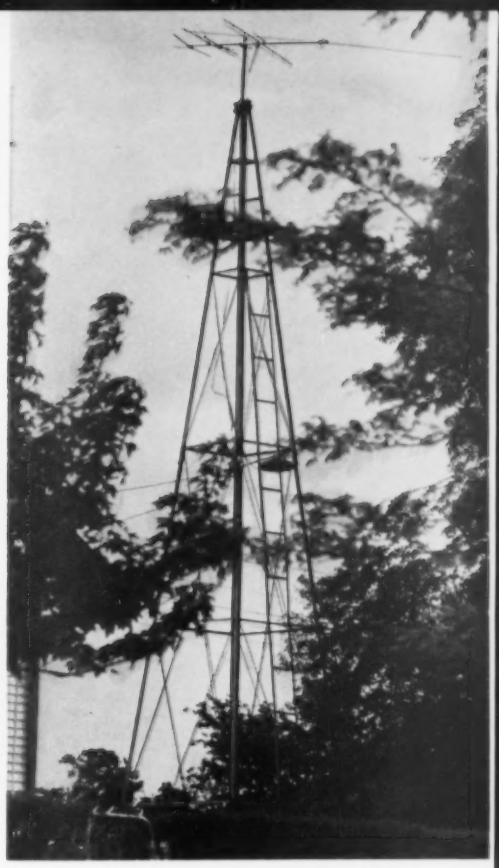
The core consists of 85 fuel elements of slightly enriched uranium and up to 13 control rods. This assembly is positioned near the bottom of the reactor core tank.

Control rods for the reactor are compact unitized assemblies, located inside the core tank and immersed in the coolant above the core. The neutron absorber element consists of an assembly of tubes filled with boron carbide, positioned to operate inside the circular fuel elements. A drive mechanism operates on the magnetic-jack principle, raising and lowering the rod in progressive steps by energizing appropriate sets of electromagnetic coils.

The system is designed to provide



Water power is a memory to Reuben Landman who sits near the mill that his grandfather built.



Wind power bows to the electronic era as windmills that once pumped power to farm homes are now used as TV antennas.

operational flexibility comparable with that of a conventional power plant. It is designed as a load-following system—reactor level is varied according to steam demands. Superheated steam at constant pressure is supplied to the steam header in the Piqua municipal power plant.

The plant control program is based upon constant core-coolant flow, constant core-outlet temperature, constant superheated steam pressure at the Piqua header with organic flow to the boiler varied and controlled by means of a bypass.

A protective system reduces reactor power level automatically when an "off-normal" condition is detected. The corrective action will be either a reduction of reactor power (power set-back) or a complete shutdown (scram). Corrective action is not taken unless at least two sensing instruments simultaneously give abnormal signals. The power set-back is intended to correct off-normal conditions in the power reactor without a complete shutdown.

Power set-back automatically lowers the control rods and thereby reduces reactor power. Power reduction is continued until all conditions requiring a set-back are corrected. A scram is initiated only if all other automatic actions of the plant protective system fail to correct the condition.

It should be emphasized that the protective instruments and automatic shutdown devices are for the protection of the plant and are not necessarily required for protection of personnel. Any conceivable danger, thought to be damaging to various networks of the atomic furnace, does not normally constitute a threat to the well-being of those working around the reactor. As in a conventional boiler, certain precautions are demanded to keep the equipment functioning at its most economical, longer-lasting state.

Fuel

In general, fuel for the reactor is a slightly enriched uranium metal alloy, clad with aluminum. The organic hydrocarbon liquid, used as coolant and moderator for the reactor, is a commercially available mixture of terphenyl isomers.

Even used as supplementary power, the reactor provides several advantages over a conventional boiler of equal capacity. Coal piles will be reduced, and the ground normally allocated for fuel storage may be used for other purposes. There are possibilities of reducing labor and fuel costs, even without speculating on the coal markets and transportation developments.

Coal contains 6% to 12% moisture, which in adverse weather presents unloading difficulties. Steam lances and oil torches are used to assist the unloading of frozen coal and a motor-driven mechanical car shaker must be used to unload coal cars. In addition, coal is passed progressively from car to track to hopper pits, to conveyor, crusher, elevator and a bunker before it is ready for stoking. Each load must be weighed and recorded.

Piqua does not believe that a nuclear power reactor is a cure-all for electricity-producing ills. We do believe, however, that an abundant supply of dependable, low-cost power is a key to all progress. As far as the actual generation of electricity is concerned, the city's nuclear energy plant will be basically the same as any other steam generating plant. The big difference lies in the fuel. There is nothing mysterious about atomic power. It is just good old-fashioned heat.

We, in Piqua, therefore have looked to the atom for a new kind of fuel—to help meet present and future electricity needs, to keep our city strong industrially and to lift our present high standard of living to even higher levels. ◄◄

Each phase of sewer construction should be properly supervised and inspected.

Inspection—The Key To Proper Sewer Construction

By K. F. GERLEMAN
Chief Engineer
Clay Products Association

If you want to waste money, do a poor job of inspecting your sewer construction work. If you want to waste more, do none at all. On the other hand, if you want the most value for your sewer dollar, spend part of it on good sewer inspection. Plans and specifications may be the best and the contractor well experienced in his field but this in itself is no guarantee that the sewer structure will be built and will function according to plan. In other words, poor inspection can nullify the best in design.

Inspection responsibility is manifold. Of prime importance, however, is its function to assure that construction closely follows the engineering specifications in every detail. To do justice to this responsibility, the inspector must understand the relationship between the specifications and the basic sewer-design criteria upon which they are based. Knowledge of this relationship improves the calibre of inspection.

From the standpoint of proper sewer construction, each of the following should be carefully understood, supervised and inspected:

a. **Materials**
b. **Trench excavation**
c. **Pipe bedding**
d. **Pipe laying**
e. **Pipe jointing**
f. **Backfilling and tamping**
g. **House sewer connections.**

Materials and Excavation

Inspect all sewer materials, including pipe, manholes, and other appurtenances prior to acceptance, to assure they are of the quality required by the specifications. Pipe specifications are usually those established by the American Society for Testing Materials and are incorporated within the engineer's project specifications.

Sewer pipe should be field inspected to be sure it has not been cracked in transport or badly chipped, and conforms to the engineer's specifications and A.S.T.M. Standards. Have all rejected materials removed from the site immediately.

Regardless of the equipment used for excavating, keep the trench width as narrow as possible, *especially from the trench floor to the level of the top of the pipe.* In no case should the trench exceed the engineer's specifications for maximum trench widths. To do so imposes an additional load on the pipe that has not been figured in the original design.

Figure 1 shows that, when a trench is backfilled, the depth of the backfill is greater on each side of the pipe than immediately over it. Because of this, there is greater

settling of the backfill on each side of the pipe than immediately over it. This differential settlement increases the load on the pipe by pulling down, through friction, on the backfill material over the pipe. The trench walls on the other hand have a tendency to support the backfill and prevent its settling. Keeping the distance between the pipe and the walls of the trench to a minimum reduces friction between trench walls, thereby lessening the downward pull and load on the pipe. Conversely, as the distance between the pipe and the trench wall increases, the load on the pipe increases.

As an example of the importance of maintaining design trench width, an eight-inch diameter pipe laid in a sand and gravel soil at a ten-foot depth (over the top of the pipe) with a two-foot trench width, will have a load of approximately 980 pounds per foot. Increasing the trench width only six inches, from 2 feet to 2½ feet, increases the load on the pipe to 1,230 pounds per foot, nearly 26%.

When excavating in unstable ground, use sheeting and bracing to protect the workmen from slides and cave-ins and to hold the trench width to a minimum, at least to the level of the top of the pipe. Good engineering practice recommends that if sheeting is to be reclaimed from the trench, it be cut off above the level of the top of the pipe, leaving the lower portion in place.

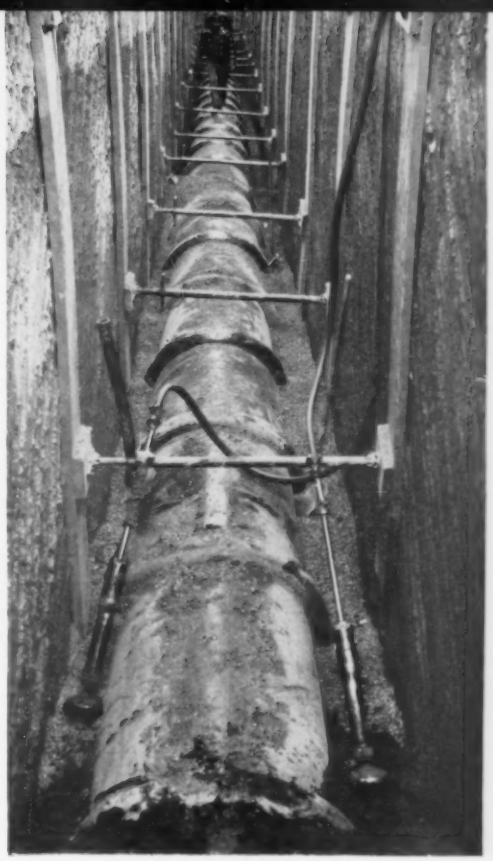
One of the most difficult problems in sewer excavation is the removal of ground water which finds its way into the trench. It is the inspector's responsibility to make sure the trench is dry, according to the specifications.

Unforeseen Conditions

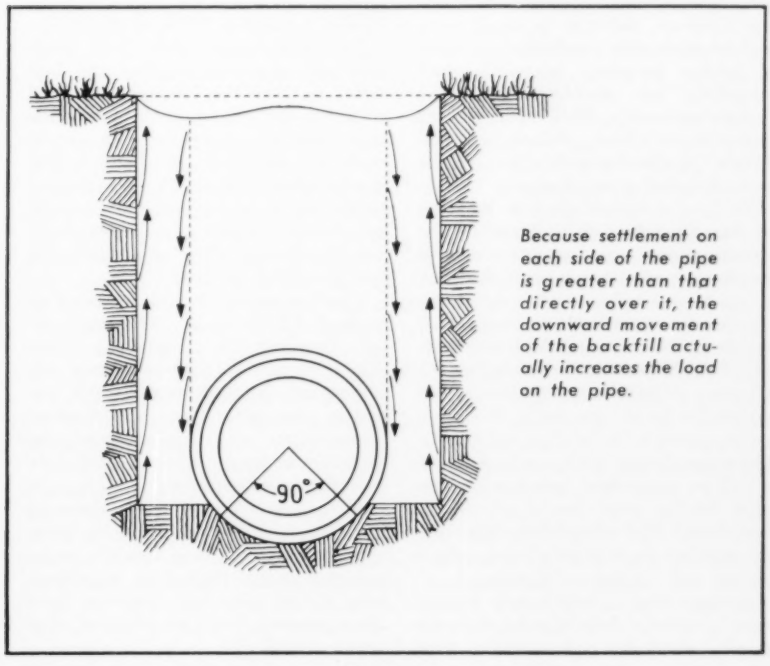
The engineer cannot foresee, or be completely certain of, soil and ground conditions throughout the entire project even though soil borings are taken. Thus the inspector should advise him of all adverse soil and ground conditions not originally contemplated so he may introduce changes in the original construction plans. For instance, the engineer may have based his design on soil weighing 100 pounds per cubic foot when, in the field, greater unit weight soils are encountered. Changing to extra strength pipe or better bedding, or both, may be in order to compensate for the additional load.

Carry excavations and trenches in rock to a depth of one-fourth the diameter of the pipe, but in no case less than four inches below the pipe bottom. Then lay the pipe to grade on a backfill of coarse sand or crushed rock which provides a firm and uniform bedding.

The specifications may require several different types of bedding



Backfilling should be done in thin layers (about six inches) and properly tamped to at least two feet above the top of the pipe.

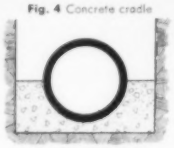


Because settlement on each side of the pipe is greater than that directly over it, the downward movement of the backfill actually increases the load on the pipe.

Figure 1.

Narrow trenches and proper bedding are the key points to proper sewer construction.

SUPPORTING STRENGTH OF CLAY PIPE ACCORDING TO METHODS OF LAYING

PIPE SIZE IN INCHES	Fig. 1 Ordinary bedding method		Fig. 2 Improved bedding		Fig. 3 Concrete cradle		Fig. 4 Concrete cradle		PIPE SIZE IN INCHES
			Minimum depth of sand, gravel, crushed stone, slag or coral one-fourth pipe diameter but in no case less than 4".		Minimum concrete depth one-fourth pipe diameter but in no case less than 4".		 Minimum concrete depth one-fourth pipe diameter but in no case less than 4".		
	100% Supporting strength Based on ASTM Sand-Bearing Test		130% Supporting strength Sand-bearing test		160% Supporting strength Sand-bearing test		225% Supporting strength Sand-bearing test		
	SUPPORTING STRENGTH IN POUNDS PER LINEAL FOOT								
	Standard Strength	Extra Strength	Standard Strength	Extra Strength	Standard Strength	Extra Strength	Standard Strength	Extra Strength	
6	1650	3000	2145	3900	2640	4800	3710	6750	6
8	1950	3000	2535	3900	3120	4800	4385	6750	8
10	2100	3000	2730	3900	3360	4800	4725	6750	10
12	2250	3375	2925	4385	3600	5400	5060	7590	12
15	2625	4125	3410	5360	4200	6600	5910	9280	15
18	3000	4950	3900	6435	4800	7920	6750	11135	18
21	3300	5775	4290	7505	5280	9240	7425	12990	21
24	3600	6600	4680	8580	5760	10560	8100	14850	24
27	4125	7050	5360	9165	6600	11280	9280	15860	27
30	4800	7500	6240	9750	7680	12000	10800	16875	30
33	5250	8250	6825	10725	8400	13200	11810	18560	33
36	5850	9000	7605	11700	9360	14400	13160	20250	36

Based upon recommended practice for installing clay sewer pipe (ASTM designation C-12)
Standard strength pipe (ASTM designation C-13) Extra strength pipe (ASTM designation C-200)
NOTE: All calculations are based on surface of pipe barrel bearing the load and are void if pipe rests on blocks or bells.

The precautions which are necessary for good sewer-main construction also apply to making house connections. Here flexible compression joints are being used.

on any one job. It is imperative that the inspector understand the characteristics of each type and ascertain that nothing less than the quality specified be used. When, in his opinion, adverse ground, soil, and construction conditions warrant a better bedding material than specified, he should notify the proper authority. The table on this page shows the relationship between supporting strength and the type of bedding employed.

To use a lesser quality bedding in the field than called for in the specifications can cause serious problems; even structural failures. A good example of this is where the design is based on ordinary bedding, when, in the field, only impermissible bedding is accomplished. (Impermissible bedding is one in which little or no care is taken to shape the foundation to fit the lower quadrant of the pipe. At best, it offers only line bearing to the pipe barrel and, therefore, in no case will the supporting strength be greater than 75% of the values shown for ordinary bedding.)

Today many engineers realize that ordinary bedding is not the most practicable or simplest type of construction, especially from the standpoint of the contractor, and have gone entirely to improved bedding for all standard sewer design.

Pipe Laying and Jointing

Lay the pipe with bell ends pointing upgrade, digging the bell holes so that the loads are carried only by the pipe barrel. Use grade bars (batter boards) and grade rods to establish good line and grade (See Figure 2) and inspect these items periodically as the job progresses to see that they have not been disturbed and that the grade string is taut.

The inspector should be familiar with A.S.T.M. C-12, "Recommended Practice for Installing Clay Sewer Pipe" in order to have ready reference to pertinent details relating to strength classification, preparation of trenches and the trench bottom, pipe laying and backfilling procedures.

Two general types of jointing materials for sewers are in common use today: the flexible compression joint (A.S.T.M. Specification C425) and the adhesion joint (hot-poured, cold mastic and die-cast asphaltic).

Engineering specifications usually

cover the characteristics of the specific joint or joints to be used as well as the way they should be installed in the field. To be effective, the adhesion joints, in particular, require a high degree of conscientious workmanship and, therefore, require thorough inspection to assure a tight joint with a minimum of infiltration. The inspector should familiarize himself with the jointing media to be used and the way in which it is to be applied.

He is responsible for making sure that these jointing materials are used in strict compliance with the manufacturer's instructions.

The new self-centering push-type flexible compression joints are normally applied to the clay pipe at the factory by a special manufacturing process and are therefore ready for immediate installation at the job site. A.S.T.M. C425 defines the test requirements, field performance and acceptance of flexible compression joints, including infiltration-exfiltration testing.

The use of quality jointing does not eliminate the need for good sewer construction practices.

Backfilling and Tamping

Faulty backfilling methods can easily result in misalignment of pipe, opening of the joints, and excessive settlement of the backfill itself. This phase of inspection is just as important as the inspection of trench width, proper bedding and pipe laying. If not properly executed and inspected, this final construction phase can ruin all the good sewer construction practices which preceded it.

Use only selected loose dirt or fine sand, free from rocks and hard lumps. First place the material under the pipe haunches and then in uniform layers of about six inches up each side of the pipe. Tamp each layer as it is placed and repeat the process until the backfill is about two feet above the top of the pipe. The rest of the backfill may then be placed by bulldozer or by bucket, again being certain that no large rocks, frozen chunks of earth, debris, or spongy materials are used.

Flooding or puddling to consolidate the backfill and reduce the necessity for tamping is not considered advisable. There is a real danger of destroying the carefully prepared bedding underneath the pipe by inserting a high-pressure jet of water into the earth immediately surrounding it. As pointed out before, the supporting strength of a pipe line depends to a great extent upon the manner in which it is bedded. Then, too, in deep trenches, the added load caused by flooding the backfill could conceivably cause pipe cracking and failure.

In any case, puddling or flooding should never be resorted to before the first two feet of backfill have been placed and thoroughly tamped. Its use should be limited strictly to those materials which will drain freely, such as sand and gravel, and only in the amounts needed to increase the density of the material.

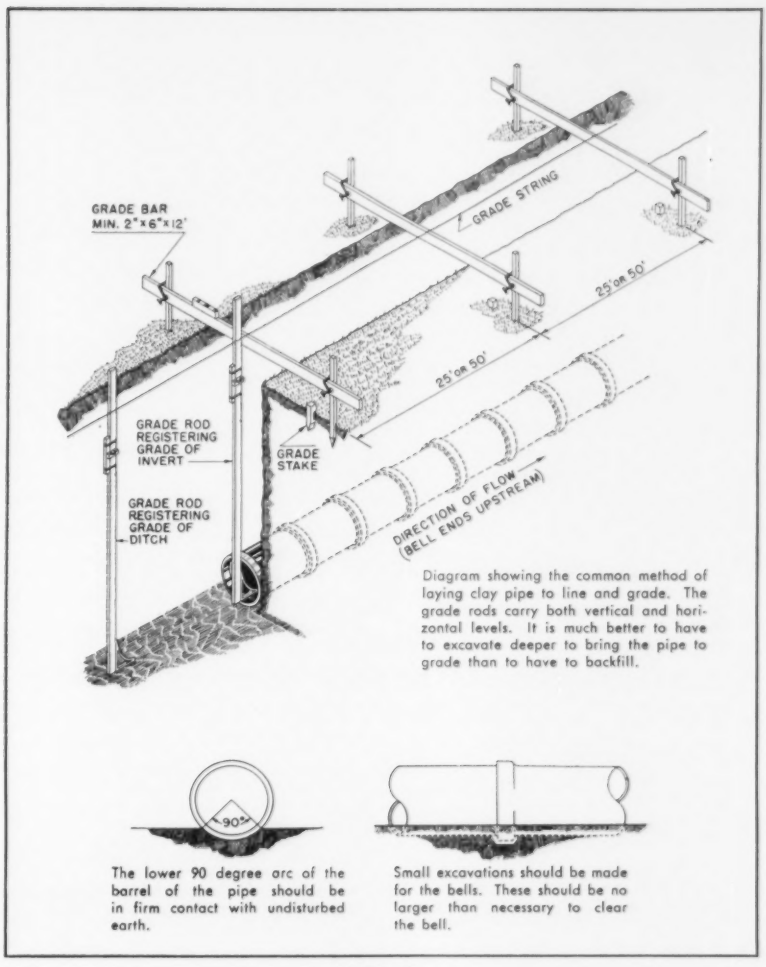


Diagram showing the common method of laying clay pipe to line and grade. The grade rods carry both vertical and horizontal levels. It is much better to have to excavate deeper to bring the pipe to grade than to have to backfill.

The lower 90 degree arc of the barrel of the pipe should be in firm contact with undisturbed earth.

Small excavations should be made for the bells. These should be no larger than necessary to clear the bell.

Figure 2.

House Connections

House connections or service lines to each property are an integral part of the sewerage system. Therefore, the basic principles for constructing and inspecting main sewer lines also apply to the laying of house sewer connections. One can realize their importance when considering that house sewers may involve two or three times as much footage as required of main-line sewers. The precautions taken against excessive infiltration in main sewers can be nullified unless they are also followed in constructing the house connections to the sewer.

This article describes only some of the sewer inspector's duties and responsibilities—those that are directly related to assuring proper sewer construction. His responsibilities are manifold and highly important. He is the "mediator" between the engineer and contractor —the "psychologist" who should be friendly, without being intimate; independent, without being aloof; and firm, without being arbitrary. He is the key to proper sewer construction practices. ◄◄

Charleston has a set of new residences built in the style of the old city . . .

Charleston Guards Its Historic Structures

City ordinance requires review by architectural board before remodeling or demolition

. . . where once was this unattractive warehouse.
Photo courtesy of the Charleston Evening Post

By **HILLIARD B. GOOD**
City Engineer

The historic and architecturally charming structures in Charleston, S. C., now have a city ordinance to help protect them. No longer will these structures be destroyed or altered without first having the action scrutinized by the city's Board of Architectural Review.

The enactment of this ordinance represents the efforts of the city administration, the Historical Charleston Foundation, the South Carolina Historical Society, the Preservation Society of Charleston, and similar groups. It was precipitated by the increasingly frequent demolition of old or historically important structures without regard to aesthetic damage.

In contrast, it has resulted in what might be classed as "constructive demolition." For example, a local firm that calls itself Restoration, Inc., purchased an old brick warehouse one block from the eastern waterfront. In place of this unattractive structure, the city now has six row-type residential structures which conform to the old, surrounding architecture. The same firm has just undertaken a somewhat similar project of eight residential units directly on the waterfront one block away. Within the past year and a half other important historic structures also have been saved from the demolition hammer. Bennett's Rice Mill once had been condemned as a fire hazard. However, through the efforts of the interested groups, a plan was developed cooperatively in the city engineer 's office, by the Charleston Fire Department, and by various engineering and construction companies whereby the roof and all interior timber were removed and a system of structural steel bracing substituted.

A copy of the Charleston ordinance providing this protection will be supplied to interested city officials who request it. ◄◄

Ford 1801 Series Industrial diesel tractor with Ford Super-Duty loader

FORD PRODUCTIVITY REPORT

George Kalinovik, manager
National Coal and Oil Co.,
Detroit, Michigan

"My Ford loaded 10,000 tons of coal last year—fuel cost about 2¢ a ton"

Mr. Kalinovik reports: "We load from 15,000 to 20,000 tons of coal a year—over half of it by loader into trucks or conveyor hoppers. This figures out at roughly 33 tons a day, from one to two hours of actual tractor work, and fuel for my Ford is about a gallon or 16¢ worth an hour. I can do five times as much work with the Ford as with my old loader. It's a much bigger bucket, and more important to me, power steering makes handling easy even where trucks have cut ruts in the yard. With the old loader, my arms got so tired they'd be shaking after I worked for a while. We load high-sided trucks we couldn't even reach before without a conveyor. We push rail cars wherever we want them. We even use the loader as a jack to change truck tires. We get all this with Ford—speed, big capacity, high dump, easy steering and low fuel cost. What more could you ask?"

Ford Motor Company

FORD CAN BE YOUR STAR PRODUCER, TOO . . . See your dealer soon!

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Ford 801 Series Powermaster tractor with heavy duty front end, Ford Extra Heavy Duty loader, Ford 12' backhoe.

FORD PRODUCTIVITY REPORT

Robert Rogers, owner
Handy's Trucking Co.,
Wallingford, Conn.

"I put a quarter-yard power digger in dead storage after I got my Ford"

Mr. Rogers reports: "I've had 5 years of backhoe work, and this Ford beats them all. I've got a truck-mounted cable type digger I can't even afford to use any more. The Ford works almost as fast, and doesn't cost near as much to operate. And I can take the Ford into places the bigger rig can't even go. I've got another tractor backhoe, too, but it doesn't compare with Ford. A job that takes 12 hours with the other backhoe, for instance, takes me about 8 hours with Ford. On this sewer job here, Ford will save me at least $75. I like Ford's undercutting, too. Went under a water main on this job and didn't shovel a wheelbarrow full of dirt. Never tear up a sidewalk any more. The only thing I can find wrong with Ford is that my other backhoe isn't one of them. And believe me, it soon will be."

Ford Motor Company

TRACTOR AND IMPLEMENT DIVISION • FORD MOTOR COMPANY • BIRMINGHAM, MICHIGAN

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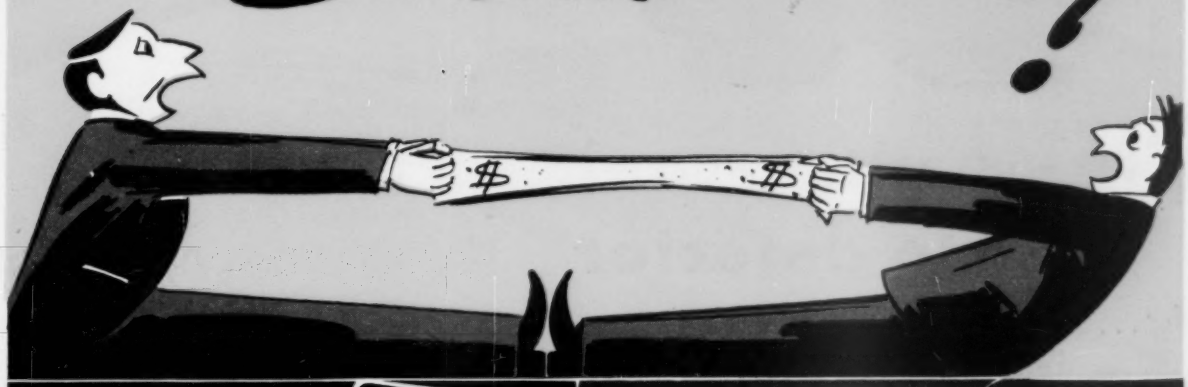

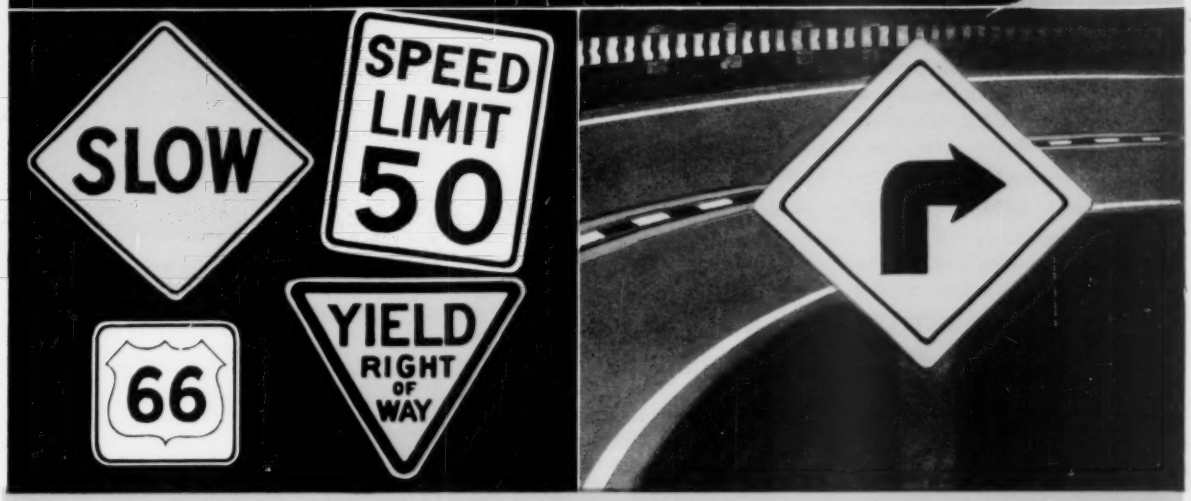

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FLEX-O-LITE MANUFACTURING CORP.

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for . . . Signal Actuation • Traffic Counting Parking Garages • Parking Gate Control

The CHEKAR vehicle detector uses ultra-sonic (inaudible) sound waves to sense the presence of motor vehicles. Detection is independent of number of axles, weight, size, shape, or speed of vehicle. CHEKAR detection—the new, electronic solution to an old problem—gives you outstanding advantages over treadles, pressure pads, electric eyes, magnetic loops, and radar.

OVERHEAD SENSING UNIT — CHEKAR sensing unit mounts overhead. No traffic impact, no wear. No problems with snowplowing, ice, flooding, dirt. No pavement breaking needed to install or maintain.

TRUE "PRESENCE" DETECTION—CHEKAR senses actual vehicle "presence," from dead stop to over 75 mph. Motion *not* required.

RAZOR-SHARP PRECISION—CHEKAR gives individual detection of vehicles, even when practically bumper to bumper. Covers selected lanes without "spill-over" into other lanes.

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INTERFERENCE FREE—CHEKAR ultra-sonic beam is not interfered with by snow, smoke, fog, road splash, stray light, or noise.

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Write for descriptive literature and the name of our representative for your area.

CHEKAR detector accurately senses vehicles approaching traffic-actuated signal, ignores receding traffic on adjacent lane.

CHEKAR detectors give reliable, weatherproof, "people-immune" operation of these parking gates.

TOOLS FOR TRANSPORTATION

ELECTRONIC CONTROL DIVISION

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Congress Street's center mall in Chicago.

Public Transport in Five Great Metropolitan Areas—Part I

This is the first section of a three-part report on public transportation in New York, Chicago, Philadelphia, Boston and Cleveland, uncovering principles applicable in smaller metropolitan areas; this part deals with New York and Chicago

New York, of all cities, has been the most successful in persuading motorists to keep their cars out of the central area. It is the nation's best example of how the growth of peripheral off-street parking naturally takes place, and how encouragement of this will help relieve downtown congestion.

The New York metropolitan area, probably the largest in the world, embraces portions of the states of New York, New Jersey, and Connecticut. Of the 15 million people in the area, eight million live in New York City.

Since New York City is becoming more commercial than industrial, its central business district is extremely important. About 10% fewer people enter Manhattan, New York City's central area, since 1948 because of this change. Nevertheless, more than 100 new skyscrapers have been erected in midtown Manhattan since 1947. The addition has intensified peak transit loads.

The largest transit operation in the New York metropolitan area is the New York City Transit Authority, which operates the subway and surface bus system within New York City. The subways carry 4,500,000 people each day and the bus system another 1,500,000 people. The total is far greater than the amount carried in any other city in North America.

The Authority operates 6,600 rapid transit cars over 237 miles of track and more than 2,000 buses over 533 miles of city streets. It maintains 269 subway stations, 195 elevated stations, and 22 open-cut stations, or a total of 486 rapid transit stations.

The system has experienced a 31% decline in ridership since 1948. Most of this decline has taken place during the off-peak hours and on weekdays, although the reduction of 50,000 jobs in downtown Manhattan has also had an effect on rush-hour travel. The Borough of Brooklyn has experienced the greatest decrease. The only increase has been that of the Borough of Queens.

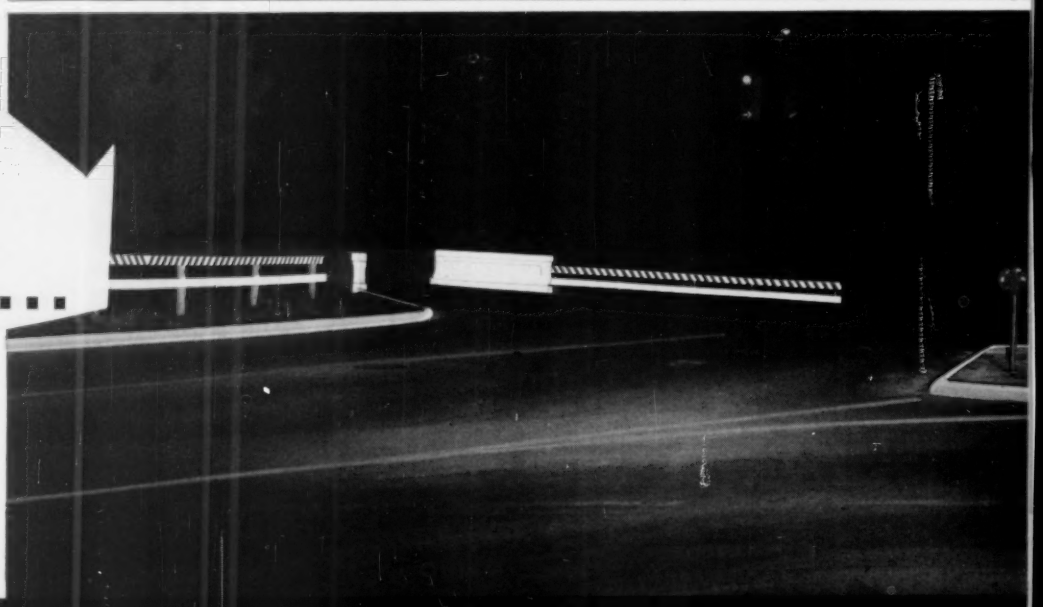
In addition to the New York City Transit Authority, there are a number of privately owned bus companies which carry over a million riders a day in New York, mostly short-haul riders in Manhattan.

In addition, seven railroads carry commuters from suburban areas into New York City: the Pennsylvania, Lackawanna, Jersey Central, Erie, New York Central, New Haven, and Long Island Railroads. Three of these do not enter the city itself,,but require passengers to transfer at Jersey City or Hoboken to ferries or to the Hudson and Manhattan, a privately

(Continued on page 127)

This analysis is drawn from a report prepared by Gunther M. Gottfeld by permission of the School of Government and Public Administration of the American University. Mr. Gottfeld is a student intern at the National Capital Planning Commission and his report was published by the Congressional Joint Committee on Washington Metropolitan Problems, of which Frederick Gutheim is staff director.

THESE HAZARDS CAN'T HIDE IN THE DARK...



they're reflectorized with CATAPHOTE V-S-R

Approach this Jackson, Mississippi intersection in daylight or darkness . . . you're instantly aware of the sharp delineation of curbs and traffic islands . . . barrier boards and bridge abutments. Bright by day . . . brilliant by night . . . these traffic hazards are *reflectorized* with Cataphote V-S-R . . . Vertical Surface Reflectorization.

Available in kit form, Cataphote V-S-R consists of specially formulated bead binder (white or yellow), automatic air operated applicator and Cataphote "101" extra high intensity glass spheres. Easily applied, V-S-R is one of the greatest aids you can provide the motoring public.

Men who lead the way in traffic control have been quick to recognize the safety values of Cataphote V-S-R . . . and use it extensively. V-S-R can help you be a pace setter, too. For more information, write for Catalog V-160.

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MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

(Continued from page 125)

owned subway line. The time and inconvenience required in transferring is an important reason for the 51% decline in train patronage since 1925. The motor buses, which have replaced many of the trains, provide direct service to the Port of New York Authority Bus Terminal in midtown Manhattan.

The equipment used by the first four railroads is not good. The Long Island Railroad, the only rail carrier to have had an increase in traffic, has been modernizing its equipment and tries to encourage off-peak passengers with cut-rate "shoppers' fares."

Chicago

Chicago still has to learn the value of peripheral parking. Only 16% of its commuters enter by automobile. Yet the congestion caused by this small percentage of auto traffic is almost unbelievable.

Chicago is the second largest metropolitan area in North America. Although it is an industrial city, it has a great deal of commercial activity in the central business district. The Loop, the core of Chicago, attracts some 850,000 people each weekday. Most work in large office buildings, particularly along Michigan Avenue. The Merchandise Mart, largest private office building in the world, houses 30,000 people.

On October 1, 1947, the Chicago Transit Authority was established to provide public transportation in Chicago and parts of Cook County. The Authority acquired the Chicago Rapid Transit Co., the Chicago Surface Lines, and the Chicago Motor Coach Co., combining them into one system. Previously the three private companies competed with each other and made no effort at coordinating rapid transit and surface facilities.

Today the Authority carries about two million passengers on an average weekday.

On June 22, 1958, the Authority began to operate the Congress Street Expressway rapid transit route. This opened a new era in public transportation in metropolitan areas because it was the first installation of rail rapid transit in the median strip of a motor expressway.

The eight-lane Congress Expressway can carry 1,500 vehicles per lane per hour. Assuming an average of 1.5 persons per car, the total capacity of the expressway is about 9,000 or 10,000 per hour one way. In contrast, the two rapid transit tracks can carry 40,000 passengers per hour each way, or four times that of the eight lanes of the expressways, and require less than 25% of the right-of-way.

The Chicago Transit Authority has made extensive improvements to its rapid transit system since it acquired them in 1947. It has purchased many new cars, replaced all of the old and dangerous wooden cars, completed the new Congress Street rapid transit, closed many lightly used stations and coordinated service between the rapid transit system and the surface system. It has established a skip-stop system on all major rapid transit routes, and has increased speeds of rapid transit lines. Today speeds average over 20 miles per hour on most rapid transit routes. The average speed on the Congress Expressway route is 25 miles per hour. Rush hour riding has increased substantially.

Five railroads provide most of the commuter traffic: Illinois Central; Chicago, South Shore & South Bend; Chicago, North Shore & Milwaukee; Chicago & North Western; and the Rock Island. The first three roads are electrified overhead operations. The latter two are diesel. The commuter railroads bring suburbanites to the Loop. They bring more people to the central area of Chicago than any other form of transportation, including the local rapid transit system. As in the case of the rapid transit, maximum-hour riding has increased.

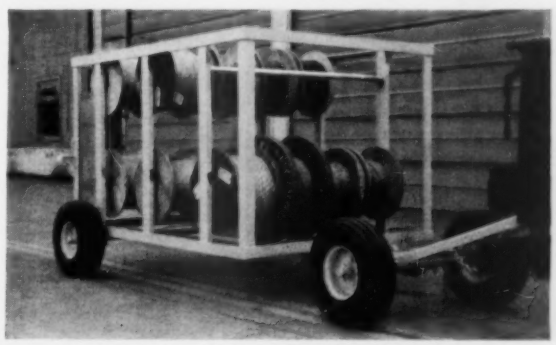
The equipment on the commuter railroads is generally no better than that in New York. The C & NW and the Rock Island have purchased a few new cars and the South Shore has extensively modernized many of its cars. But the great bulk of the equipment dates to the 1920's. ◄◄

Bomb Trailer Carries Signal Wire

Alteration of a bomb trailer to a wire reel carrier was accomplished by Shop Superintendent William Ebersole. After a cost of $200, the bomb trailer shown here was altered to handle traffic signal wire reels for the traffic division of the Engineering and Street Department of Alhambra, Calif. The suggestion was made by City Engineer R. G. Bezzant and Traffic Signal Foreman Charles Brackin that one of the bomb trailers available from surplus government property could be modified to meet this use. After inspecting these trailers and finding them usable and adequate for our purpose, negotiations were made by Civil Defense Director Leo Wayland for the acquisition of a trailer.

This unit has proved a time saver and has greatly expedited installation of traffic signal wire. It accommodates different sized reels and will handle 24 reels. In a civil defense emergency, this wire reel carrier could be used to lay communication lines and power lines at a rapid rate to replace inoperable facilities.

ALLEN B. STEPHENSON
City Manager



Alhambra's remodeled bomb trailer now carries signal wire.

Brightest Broadway in the Great Northwest

ALL-AMERICAN city, Fargo, North Dakota re-lights with Millerbernd standards

New fluorescent lighting has transformed Fargo's Broadway into a spectacular "whiteway" contributing to the selection of this city as one of 11 in the nation chosen for All-America honors. The six-foot, four-lamp GE fluorescents provide almost five times as much light as previous incandescents. Luminaires are mounted on 30-foot Millerbernd Elite standards, flooding the street, walks and shops with uniform glare-free lighting.

Primary goal of the re-lighting program was maximum safety for pedestrians and vehicles, but another benefit already evident, is an increase in evening shopping activity.

In your city, the classic, modern design of Millerbernd standards lends a modern touch to the overall appearance of any development . . . makes an immediate and lasting impression *that here is a progressive city*. No other single improvement of equivalent cost does so much for municipal modernization.

Write for booklet OTA
Describes Millerbernd Elite Standards and four other modern styles. Shows new developments in fluorescent-type standards.

Millerbernd

MANUFACTURING CO.
WINSTED MINNESOTA

Palatine's 114-car illuminated municipal parking lot.

Shoppers' Parking Lot in Palatine

The downtown merchants of Palatine, Ill. (a growing suburb of 12,000, located some 30 miles northwest of Chicago) were suffering from a parking shortage. While Palatine has had Park-O-Meters since 1948 with plenty of space on weekdays, the Friday night and Saturday business rush found the area bursting at the seams. Frustrated parkers sought other shopping centers.

Financing

At the request of the local Chamber of Commerce, Howard I. Olsen, village president, and the Palatine Village Board began a study of the problem and finally decided to acquire half of a city block in the downtown area and to construct a 114-car lighted parking lot. The land cost of $143,000 plus the improvement, lighting and metering of the lot was met by the issuance of $194,000 Motor Vehicle Parking System Revenue Bonds (5%). The entire bond issue was sold locally to thirteen individuals and firms by Roy L. LaLonde, a local businessman. Palatine has five other off-street parking facilities for 250 cars in addition to 255 on-street meters. The revenues of all meters are mortgaged to the 25-year bond issue with the usual allowances for enforcement, depreciation, snow removal and allied costs.

Cars are self-parked at a 90° angle (head in) with their bumpers flush against three 18″ concrete curbings located along the 264-foot dimension at the center and the north and south boundaries. All curbings were poured to allow pedestrian walks between cars. Angled parking, while admittedly easier for the motorist, would have cost a minimum of 14 parking spaces and required one-way traffic in the aisles. We have had complaints only in a brief period when some motorists had to learn to park properly. Since several cases of theft of parking meters elsewhere in the village had occurred, our new meters are set in the concrete, and on the driver's side of the parked vehicle for greater convenience. Stalls are 9 feet wide by 18 feet long, thus allowing a 26-foot aisle for two-way traffic. We find that the curbings enable us to remove snow more efficiently than if six-inch low wheel stops had been used; the plows can move right up to the curbings which are always in view above the snow.

Our parking meters are Type H, split-rate Park-O-Meters, nine-hour dial, and accept nickels, dimes, quarters and tokens. Rates are 5c per hour up to and including four hours, the fifth coin or token giving five additional hours or a total of nine hours. The nine-hour limit was set to eliminate ten-and-twelve-hour parking by commuters going to Chicago. The hours of enforcement are 9 a.m. to 6 p.m. daily except Sundays and holidays. Merchants purchase several hundred dollars worth of tokens each month for distribution to their customers.

Left to right: Robert J. Eppley, village manager, Roy LaLonde, who sold the bonds, Martin E. Plate, director of public works (now retired), and Howard E. Olsen, village president.

Lighting

The lot is attractively lighted with three hinged metal poles, each mounting twin four-foot mast arms with mercury vapor luminaires, located in center curb. Reflectorized entrance signs are used. Trucks longer than average car length are not permitted since they would become aisle obstacles.

New sidewalks were laid around the lot, with plantings of low-spreading yews along the front, and flowering crab trees at the sides. Traffic may enter and leave at any of four points but the center curbing

(Continued on page 130)

(Continued from page 129)

prevents cars driving from one section to the other.

The paving consists of an eight-inch waterbound macadam base with a two-inch surface course of bituminous material. Pavement striping is white with long oval striping between parking stalls as an aid to proper parking.

All engineering and construction except paving was performed by the Village Department of Public Works under its director, Martin E. Plate (now retired). The village engineers, Consoer, Townsend and Associates of Chicago, prepared the financial feasibility report.

In addition to providing parking facilities, the new lot is serving as a central meeting place for various local activities. The Village Band, under the sponsorship of the Chamber of Commerce, presented a two-month series of weekly band concerts in the lot, and the new Christmas nativity scene display is located there. The entire project is another step in the realization of the Palatine Master Plan, prepared by the Palatine Plan Commission, for the re-vitalization of the downtown business district.

ROBERT J. EPPLEY
Village Manager

Visible Records Handle Traffic Violations

To speed the handling of its eight-million-dollar-yearly business in traffic violations, the Los Angeles Municipal Court District has installed a visible record system that, in a matter of seconds, enables clerks to find information on any one of the 1½ million violations which have occurred within twelve months.

The new system is the first in a plan to create a central index system for the entire 26 judicial systems of the city and the county. It will connect departments by teletype and will handle between five and ten million names annually.

Six "teller" windows with two revolving Acme Flexoline desk stands made by Acme Visible Records, Inc., Crozet, Va., at each provide the contact. Each window is manned on an 8:30 a.m. to 5 p.m. shift by two girls. One contacts "the public," while the other flips through the stands of frames. The stands hold up to 32,800 strips listing the date of the violation, name, address, violation, license number, vehicle registration number, and the officer's citation number.

A yearly record is kept because fines pyramid with each violation so that a motorist who gets ticketed once for parking will find the cost increasing from $2 to $5 or $10 depending on the number shown under his name on the stand. Moving violations are also shown and in some cases the racks will show up to a dozen violations for one motorist.

Recently, a test was made to determine if perhaps violations for only six months should be maintained. A sample check showed that the department would lose between $500 and $600 each day if records were cut to six months.

The personnel in charge of the window are all law clerk typists from the city attorney's office and total 16 for the eight windows plus a supervisor, an assistant supervisor, and two teletype operators who answer queries from outlying branches of judicial districts and refer to the stands for records.

R. R. Benkert, chief of the traffic division, inspects a Flexoline desk stand listing the date of the violation, name, address, and violation data. The correct strip can be located in seconds.

Although the use of the Flexoline Stand has a very slight seasonal fluctuation due to either rain or vacations, the racks are used constantly with hardly a 30-second period when one of the tellers at each window is not searching through them.

According to R. R. Benkert, Chief of the Traffic Division, "the system is without flaw." ◄◄

Parking Garage for Oshkosh

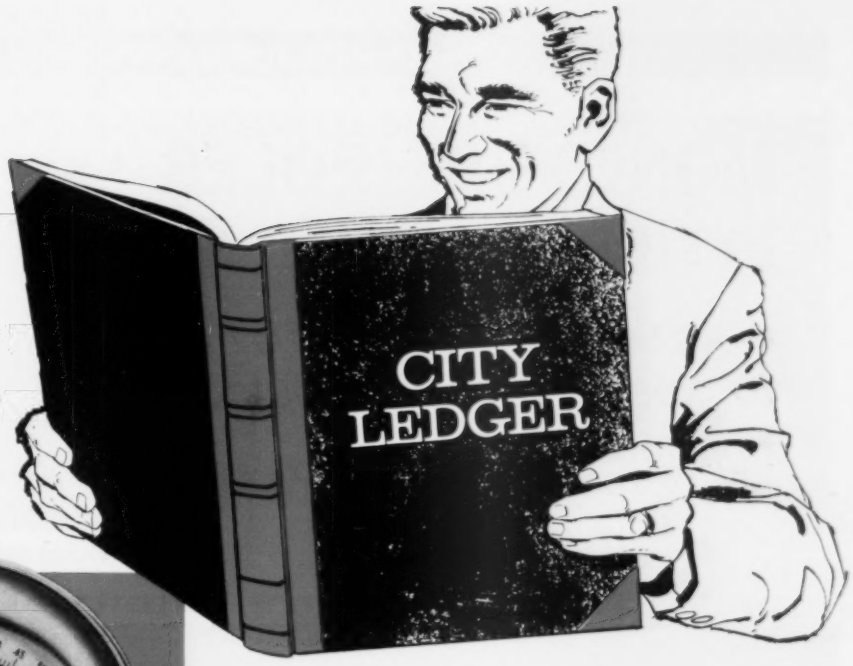
A 282-car municipal parking garage was opened December 13, 1959 in Oshkosh, Wis. The eight floors are ramps inclined 3.87%.

The parking decks for the structure were placed in position by the Youtz-Slick lift slab method of construction, using hydraulic jacks mounted on tops of columns. Proposals were received from the bidding contractors on the lift-slab method of construction and on conventional forming, shoring and placing concrete in final position methods. Proposals received indicated an approximate five (5%) saving for the lift-slab method. The method permits placing the reinforcing steel and concrete at grade level with a minimum amount of forming and labor.

Four-hour Rockwell Dual parking meters are installed on the first three ramps; 24-hour meters on ramps 4, 5 and 6; monthly parking on ramps 7 and 8. The meter rate is 5 cents per hour every day.

The architects were Sandstedt-Knoop-Yarbro of Oshkosh. The consulting engineers were Charles Nagel and Associates of Milwaukee.

HANS S. THORGRIMSEN, *City Manager*



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An up-to-date parking meter system can mean the difference between a profit and loss to your city.

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Let a Park-O-Meter expert call on you to show you how you can have a profitable parking meter system.

- Service signal visible from both street and sidewalk; cuts valuable enforcement time.
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- Instant, on-site service . . . eliminates costly shop repairs.
- No exposed working parts.
- Distinctive colors for coding of time zones.

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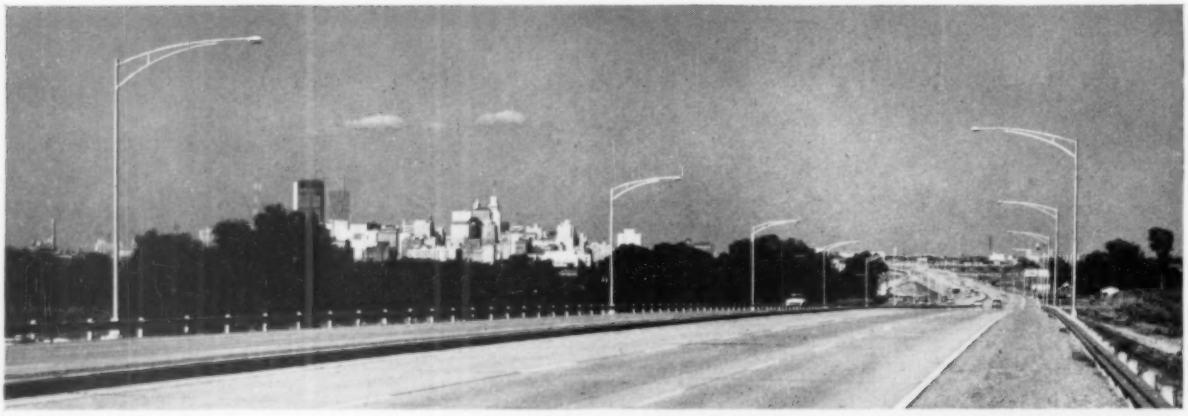

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Monotube Engineered Lighting Poles

West Michigan Avenue has 20,000-lumen lighting.

Kalamazoo Merchants Pay for Big Relighting

By **RICHARD GORMAN**
Utilities Engineer

In 1958, with the support of local businessmen, the first high intensity street lighting in ten years was installed along three separate business streets of Kalamazoo, Mich. (population 85,000).

To look backward for a moment, the city installed its first high intensity street lighting in 1948, forty 20,000-lumen mercury vapor luminaires. Twenty of the lights were on Michigan Avenue (U. S. 12), the main east-west street through downtown Kalamazoo. The other 20 were on Burdick Street, the main north-south street in the downtown area. This was one of the first large installations of mercury vapor street lighting in the country.

The First

In May 1958, the largest of the three new installations was started. The Michigan State Highway Department started to widen Michigan Avenue (U. S. 12) going west from downtown Kalamazoo. Thirty-nine 4,000-lumen incandescent street lights installed in 1928 and twenty-one 6,000-lumen lights installed in 1940 had to be removed for the highway work. The city commission had previously authorized the Utilities Department to design and install a new street lighting system for this street.

The highway to be lighted consisted of 2,400 feet of one-way road averaging 30 feet in width and 2,600 feet of two-way road averaging 75 feet wide. It abutted the portion of Michigan Avenue which had been lighted in 1948. The Westinghouse OV-35 luminaire was selected for the lighting, using a 20,000-lumen color corrected mercury vapor lamp. These luminaires, with ballasts, were mounted on Union Metal steel poles. Wiring was underground, 120/240 secondary voltage. Ninety-one luminaires were installed. Average spacing was 85 feet on the one-way road and 60 feet, staggered, on the two-way road. To maintain a consistent appearance and to improve light distribution, all luminaires installed in 1948 (Westinghouse OV-20's) on Michigan Avenue were replaced with OV-35's. The old spacing was not changed. The work was started in May, 1958, completed in November 1958 and coordinated at all times with the highway construction. The total cost of this project was $42,700 or about $475 per unit.

The Second

The second area to be lighted was a two-block business area known as Washington Square, located on Portage Street about 1½ miles from downtown Kalamazoo. Lighting in this area was by an ornamental system installed in 1930, consisting of twenty-two 4,000-lumen incandescent post-top luminaires on steel poles. The merchants in this area petitioned for fluorescent street lighting because they "wanted something different." The new installation consisted of 12 Line Material shallow-globe, 20,000-lumen fluorescent luminaires, mounted on American Concrete Corp. prestressed poles. Wiring was underground, using an existing underground conduit system. Average spacing for this street was 90 feet, staggered. Street width is 42 feet. Work was started in November 1958 and completed early in December; the total cost $8000 or $667 per unit.

The Third

The third area to be lighted was four blocks of South Burdick Street. Old lighting was 2,500-lumen and 4,000-lumen lights on wood poles. This area also abutted the downtown business area lighted in 1948. The first block of this area is an established business district. The remaining three blocks are mixed residential and business, slowly converting into business. For this street we used Westinghouse luminaires with 20,000-lumen clear mercury lamps, matching the units on Burdick Street.

The first block consists of six luminaires mounted on Union Metal Steel poles, wiring and ballasts underground. The remaining three blocks, consisting of

(Continued on page 135)

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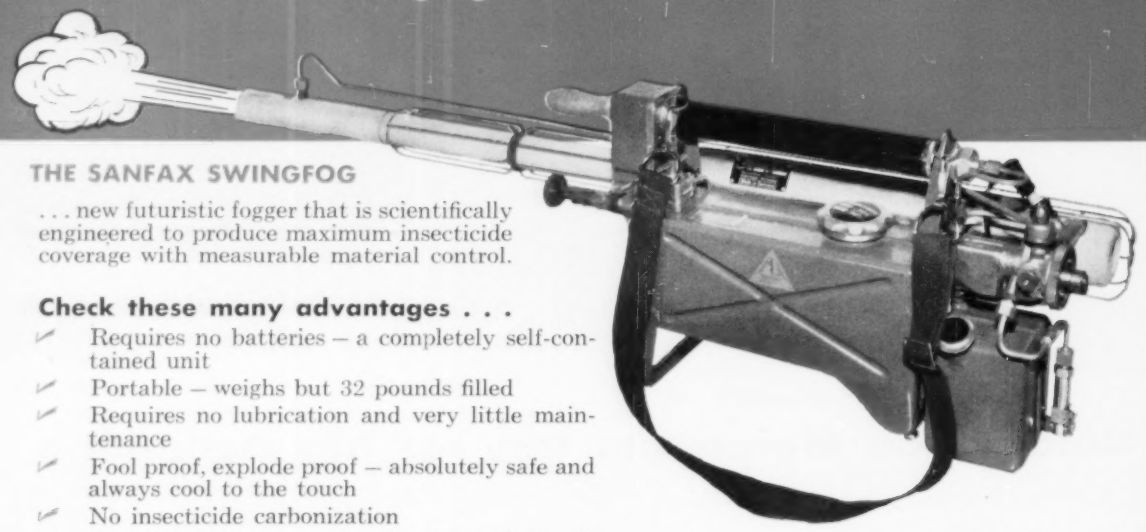
Sanfax Swingfog with Sanfax Insecticides



THE SANFAX SWINGFOG

. . . new futuristic fogger that is scientifically engineered to produce maximum insecticide coverage with measurable material control.

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- Fool proof, explode proof – absolutely safe and always cool to the touch
- No insecticide carbonization
- Permits perfect control and assures thorough insecticide penetration

For outside control

SANFAX 583 Oil Soluble Concentrate . . . residual, outdoor insecticide that is sure death to roaches, mosquitoes, flies and all types of flying and crawling insects. This powerful formulation produces a dense fog that remains in suspension to insure continual kill for a prolonged period.

When indoor control is desired

SANFAX SUPER FOG INSECTICIDE . . . especially recommended for indoor insect control. Sanfax Super Fog Insecticide assures rapid knockdown and kill of flying and crawling insects, with absolute safety to humans. The product is tasteless, odorless and non-staining. Sanfax Super Fog Insecticide is registered with U.S.D.A.

Both Sanfax 583 and Sanfax Super Fog Insecticide are highly concentrated for peak economy and specifically formulated to perform with maximum efficiency in the Sanfax Swingfog.

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(Continued from page 133)

12 luminaires, were installed on American Concrete Corp. prestressed poles, using overhead wiring and ballasts.

Paid by Assessments

In all instances, the new street lights were assessed against abutting property owners. Both the South Burdick Street and the Washington Square property owners petitioned for new street lights, asking to be assessed for this improvement. The Michigan Avenue (U. S. 12) project was necessary because the highway was widened. The city commission believed it constituted a necessary and definite improvement to the property and because all previous high intensity street lighting had been assessed, chose to assess this project also. The assessments were accepted with very few objections.

The new lighting equipment provides over five times the useful light obtained from the old street lighting. Although night-time accidents have been reduced from nine in 1958 to six in 1959 on West Michigan, we do not feel that the lighting has been in service long enough to give an accurate safety picture.

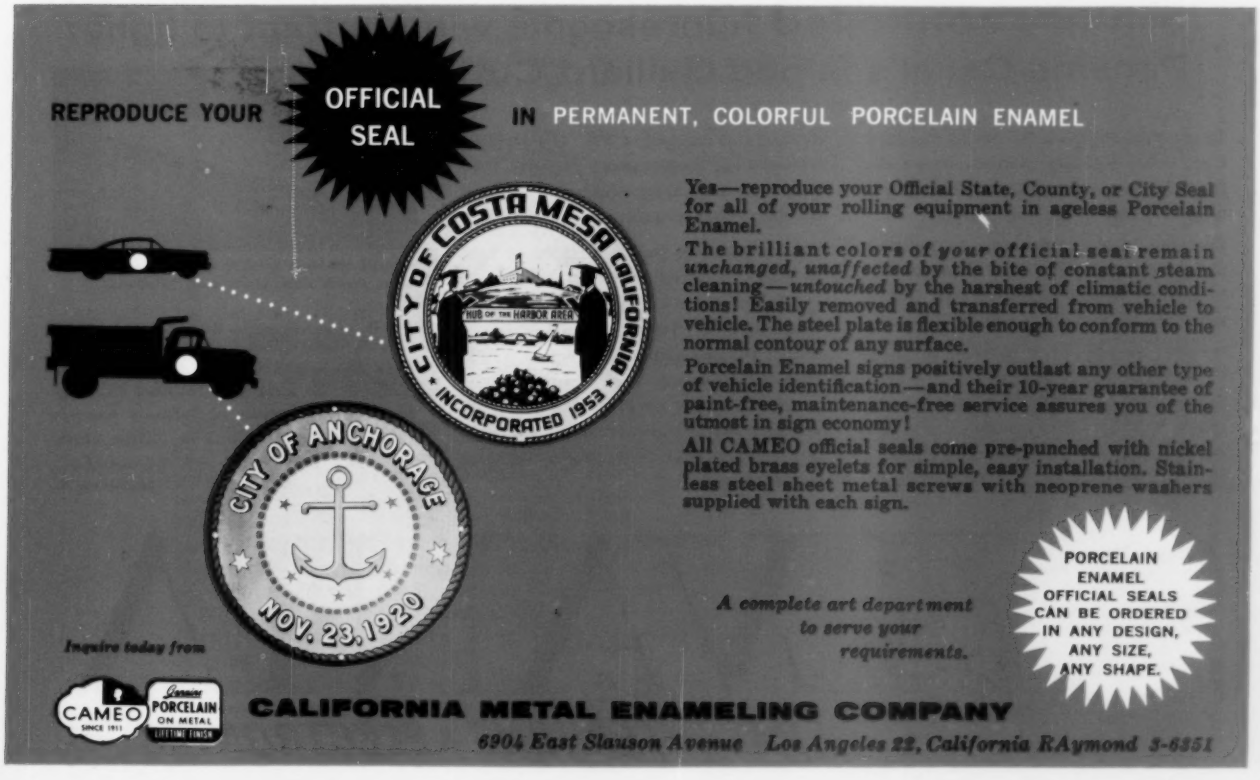
Both types of high intensity lighting, fluorescent and mercury, do an excellent job of street lighting. The city has received many favorable comments on both types from businessmen and citizens alike. Properly designed, either mercury vapor or fluorescent street lighting can be pleasing in appearance and an asset to the city.

In addition to high intensity street lighting, Kalamazoo is also improving its residential street lighting under a modernization program started in 1956. Basically, we are installing a 6,000-lumen incandescent street light at every intersection, and mid-block lighting (6,000 lumens) for all blocks longer than 350-400 feet.

Where trees are numerous, and we have many such spots, this distance is shortened. The 6,000-lumen street lights are replacing 2,500-lumen and 4,000-lumen lights. In some instances, on heavily travelled streets, we are installing 10,000-lumen incandescents. In the last three years, in residential areas, we have installed over 800 new street lights and increased the size of over 700 others.

The City of Kalamazoo now has 1,130 ornamental street lights in operation and 3,008 overhead street lights in residential service.

Kalamazoo is presently revitalizing its downtown area with the construction of a mall. We have a long range program for modernization of the entire central business district prepared by Victor Gruen & Associates. The downtown modernization and the street lights recently installed have prompted other downtown areas in the city to inquire about modern street lighting. ◄◄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Sylvania **controlled** fluorescents win contract to light Panama Canal's famed Gaillard Cut!

In the Panama Canal's critical Gaillard Cut, other lighting systems tested reflected on the water, blinding ship pilots who strained to see the banks.

Sylvania beat competition by lighting the *banks*, not the water! With low mounting, sharp definition—no reflections! Pilots can see perfectly. Now at last, in the Gaillard Cut, ships can pass in the night!

Sylvania used VHO Reflector power tubes, 8 feet long, delivering the greatest reflected brightness of any fluorescent made! Standing 65 feet apart in Sylvania-developed CFR (Controlled Fluorescent Reflectance) mounts, they throw an unbroken white wall of light up the embankments.

This is just one more example of how Sylvania lighting engineers work to give you superior lighting at lowest possible TCL (Total Cost of Lighting), which means cost of lamp plus power plus maintenance. As a result Sylvania gives every user an exclusive Light Insurance Policy *guaranteeing* more light at lower cost than other brands—or your money back!

Sylvania-developed VHO-CFR system used in Panama Canal, also on airfields, billboards, in industry.

• • •

The Panama Canal Co. enjoys this insurance. Do you? Call your Sylvania representative, or write us: *Sylvania Lighting Products, a Division of Sylvania Electric Products Inc., 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., P. O. Box 1190, Station "O," Montreal 9.*

SYLVANIA

Subsidiary of **GENERAL TELEPHONE & ELECTRONICS**

There was dancing in the streets when Ashtabula's first fluorescent lights were turned on.

A Frolic on Main Street

While the City of Ashtabula, Ohio (population 20,000), now has 632 more street lights than it had two years ago, the number tells only a partial story.

Most important is that the city's lighting was brought up-to-date, through a planned program, called the Universal Street Lighting Plan, worked out jointly by the city and representatives of the Cleveland Electric Illuminating Co.

First credit for this ambitious, comprehensive lighting program, must go to the voters of the city who approved a special levy.

That the people were pleased with their city's bright new look was evidenced when hundreds danced in the middle of downtown Main Street to celebrate turning on 32 new fluorescent units.

The step-by-step program included not only the addition of lights at new locations but the replacement of inadequate units as well. The average horizontal footcandles were upped from 0.535 to 1.65. Here is the box score: one hundred and sixty-seven 4,000-lumen and six hundred and fifteen 2,500-lumen units added. Eliminated were 310 thousand-lumen units, which were replaced by 2,500- or 4,000-lumen lamps.

The fluorescent phase of the program included ninety-one 20,800-lumen six-foot four-tube units downtown. These were additions and replacements for 6,000 and 10,000-lumen incandescent lamps.

Four months after installation of the first 32 fluorescent units was completed, Main Street merchants and councilmen were so pleased with the results that the council, in February 1959, ordered 59 more of the 20,800-lumen units. These were additions and replacements for ten 10,000-lumen and nineteen 6,000-lumen incandescents.

The installation of fluorescent lighting has had a very healthy effect in adding glamour to the appearance of the business district.

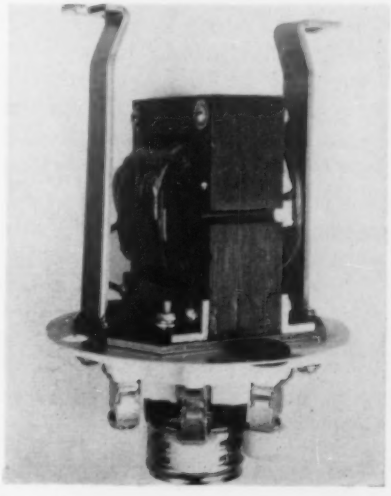
C. D. LAMBROS
City Manager

Incandescent into Mercury Vapor

This unit (right) designed to convert EEI-NEMA street lighting heads from incandescent service to mercury vapor lighting is available for 100, 175, 250, and 400 watt lamps operating on line voltages of 240 volts. It includes a lamp socket, reflector plate, choke-reactor and anodized mounting bracket. It facilitates changeover from incandescent to mercury vapor in an easy operation, usually in less than nine minutes.

With this, municipal lighting systems can convert from incandescent lighting at low cost by utilizing existing heads and mountings.

Information about the new Sylvania mercury conversion kits may be obtained from R. H. Sanders, Transformer Department, Sylvania Electric Products Inc., Ipswich, Mass. ◄◄



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product or trademark?

The most important "feature" of any product is the company that produced it. Certainly Rockwell-Dual Parking Meters offer outstanding product features . . . solid brass clock works, stainless steel "guts," five-coin combinations and a host of other innovations that make these meters an investment rather than an expenditure for your community. But the name "Rockwell" on these meters means even more. It is your assurance of helpful know-how and practical experience based on serving municipalities with water, gas, and parking meters *for almost half a century*. It is your assurance that 13 research and development centers and 23 modern manufacturing plants (Rockwell is the world's largest producer of measurement, time, and control devices) will continue to create the new products that will help you solve tomorrow's problems better and at lower cost.

A Rockwell-built Parking Meter is a *proven* product that carries a *proven* trademark—a trademark that means you can buy what we *say* as well as what we sell. Why not get complete details today on how Rockwell can help your community solve traffic problems and create new sources of revenue. Better yet, ask for an experienced Rockwell-Dual traffic consultant to help you survey your parking meter needs. Write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa. In Canada: Rockwell Manufacturing Company of Canada, Ltd., Guelph, Ontario.

DUAL PARKING METERS

another fine product by

ROCKWELL

After mercury lights were installed in White Plains.

Installing Street Lights to Cut Crime

Because street lighting is obviously the most efficient antidote for after-dark crime and traffic accidents, White Plains installed 47 General Electric 400-watt mercury-vapor fixtures.

Night-time crimes—especially those of juveniles—seem to be getting considerable attention in the nation's press. We don't have the problems of the larger cities and we want to keep it that way. Modern lighting downtown has brightened the area and given greater safety.

The city gets an economic lift too, according to our Public Works Commissioner, E. A. Andrews. Our downtown area is now more cheerful at night and attracts shoppers on store nights.

The luminaires are mounted 27 feet above the pavement on aluminum standards spaced about 100 feet apart on opposite sides of the street. About 1.5 footcandles of illumination are maintained on Main Street —a threefold improvement over the previous filament luminaires.

J. Stewart Henry, *Police Chief*
White Plains, New York

More Light from a Utility Contract

Ferguson's street lighting contract with the Union Electric Company had been in effect eight years on April 2, 1960. The city had the option to renew at the end of eight years at a reduction in the annual rate for most existing lights. A new ten-year contract signed in April saves the city $2,000 a year in street lighting costs on its 561 street lights.

The contract has three schedules called "A," "B," and "C." As most of Ferguson's growth has been within the last eight years, the majority of the existing lights are on the highest priced or "A" schedule. Only 141 existing lights are on schedule "C" and another 100 on schedule "B," leaving 320 on schedule "A." Those already on "C" rate do not change.

A survey of existing street lighting showed that 90 more lights could be utilized: 62 within the city limits and 28 in North Hills Homesites, annexed in 1958.

Besides the 90 additional lights which would make the system more complete there are 309 street lights of less than 400 candlepower. Of these 218 are 100 cp and 91 are 250 cp. These are all in the older parts of town where are the larger trees and consequently the street lighting is inadequate in many neighborhoods. Efficient police patrolling has not allowed this condition to result in a high crime rate but the possibility will exist as long as the candlepower is low.

Costs of New Lights

If the 90 new street lights are approved by the City Council and designated 400 candlepower intensity, the rate for each light would be $39.36 for a total cost of $3,542.40 a year.

Upgrading the 100 candlepower lights to 400 cp would cost an additional $4,092.96. Changing the 250 cp bulbs to the more desirable 400 cp would cost an extra $1,008.96 annually.

The total annual street lighting bill would be increased by $8,644.32 if the 218-100 cp lights and the 91-250 cp lights were upped to 400 candlepower each. Subtracting the $2,033.80 that will be saved by a new contract with new rates will leave a net increase of $6,610.52 for street lighting. If property taxes had to be increased to pay this, it would mean another 1.5¢ per $100 assessed valuation. It may be possible to accommodate the added cost of street lighting in the 1960-61 budget, without a tax rise.

The key to every foreseeable Ferguson annual budget is the cost of street maintenance. The Council's policy of paving streets that need it most has resulted in lower street maintenance costs the last two years. The 1959 street improvement projects and subsequent ones will bring further savings. These can pay for improved street lighting.

It has become traditional that most people have little interest in government and glaringly so at the local level. We even overlook something as noticeable as street lights—or the lack of them.

I have been trying to say that the street lighting is poor in Ferguson, but not many people seem to mind. Some of us have noticed it and felt this might be a good time to improve conditions. Savings on street maintenance indicate we can probably afford it, and we recommended that the Council take action.

Robert C. Storey
City Manager
Ferguson, Mo.

P & K OUTDOOR LIGHTING REPORT

the Modern Trend in LOW LEVEL LIGHTING

P&K CIRCLElux
DAVITS AND POSTS

TOP PHOTO: Location: Rath Park, Franklin Square, L. I., N. Y.
Architect: Herbert D. Phillips
Consulting Engineers: Barstow, Mulligan & Vollmer
LOWER PHOTO: Location: Fairleigh Dickinson University, Madison, N. J.
Electrical Consultant: H. L. Sykes

modern lighting at a realistic cost

Here are two contemporary outdoor lighting installations – one an all new municipal swimming pool and recreational area – the other, a prominent New Jersey University. Both chose the P&K all aluminum CIRCLElux lighting package to illuminate and compliment their roadways, walkways, landscape and architecture.

The sweeping lines of the P&K CIRCLElux davit blend with the modern one story architecture of the Rath Park Swimming Pool. Yet, the modern, but stately, design of the P&K CIRCLElux post is in good taste with the traditional architecture of Fairleigh Dickinson University. The CIRCLElux lighting package is the correct low level lighting choice to compliment almost all types of architecture.

The P&K CIRCLElux is available in a wide range of davit styles and mounting heights. The post is available in one basic design but at various mounting heights and with the CIRCLElux you have a choice of three light sources – incandescent, mercury vapor and fluorescent. This combination of luminaires and davits or posts will enable you to specify "packaged" lighting units. This means easier specifying by using matched components which in turn can customize your lighting projects.

Send in your reservation now for the *new* CIRCLElux catalog.

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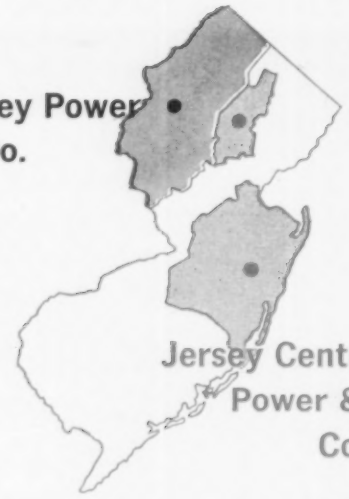
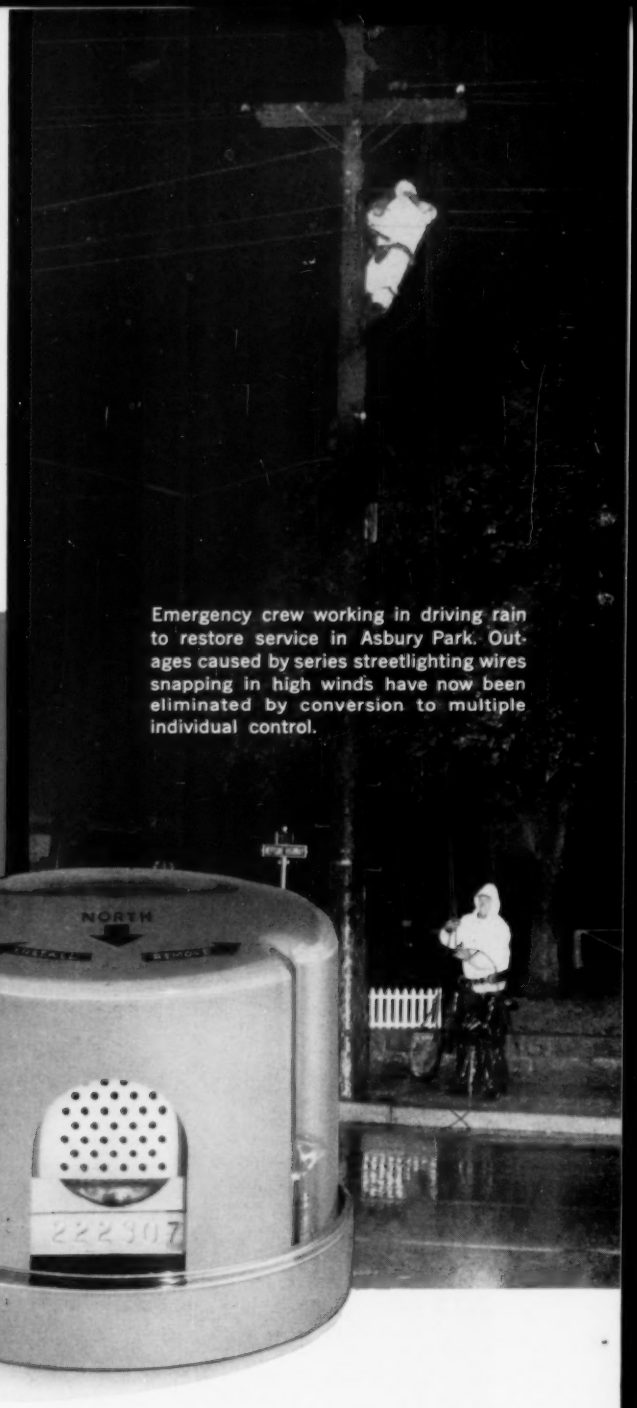
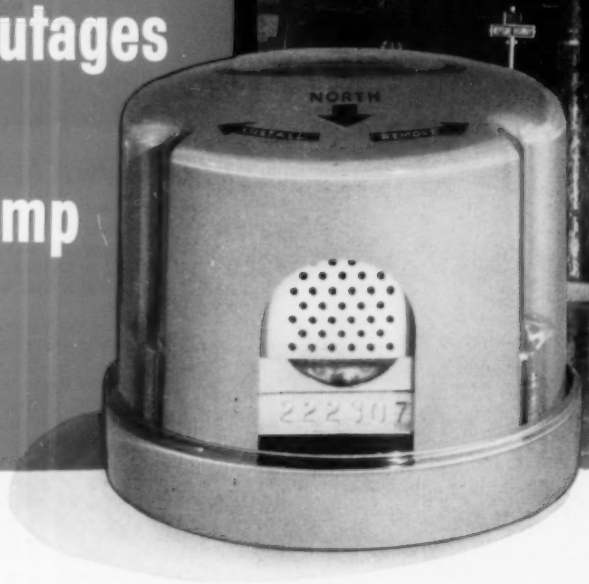




Emergency crew working in driving rain to restore service in Asbury Park. Outages caused by series streetlighting wires snapping in high winds have now been eliminated by conversion to multiple individual control.

Two Progressive Utilities Reduce Storm Outages with F-P Individual-Lamp Controls



Conversion by Jersey Central Power & Light Co. and New Jersey Power & Light Co. from series to multiple individual photoelectric streetlight controls, many of them Fisher-Pierce Series 6600A units, has eliminated some tough problems brought on by severe weather. Since 1954 New Jersey has experienced a succession of hurricanes (that year there were three in six weeks) and unusually fierce winter storms, which caused series wires to snap in high winds and under the weight of ice. Other lines were being shorted by these broken wires, or had to be cut for safety when repairing the streetlight wires. The result was many service interruptions and plenty of headaches. Individual controls—and elimination of the series wire — provided the answer.

In 1957 these utilities embarked on a progressive relighting and conversion program that has reached completion in certain areas. Every street in Asbury Park, for example, conforms to IES lighting standards, and every lamp is individually controlled. Because poles have been cleared of several hot elements, pole work is simplified. And the danger of fires from high voltage leaks due to broken series wires — a particular problem where there is damp, salty air — has also been eliminated.

Down with the old...
Up with the new...

New, brighter streetlight equipped with Fisher-Pierce Series 6600A control replaces series streetlight as part of JCP&L and NJP&L conversion program. Short time delay in the F-P control permits fast checking and effectively prevents false turn-off by lightning – no cases have been reported to these utilities. All streetlights in Asbury Park (below) are individually controlled.

For complete design information and specifications on Series 6600A controls, write The Fisher-Pierce Co., 94 Pearl Street, So. Braintree 85, Massachusetts.

FP

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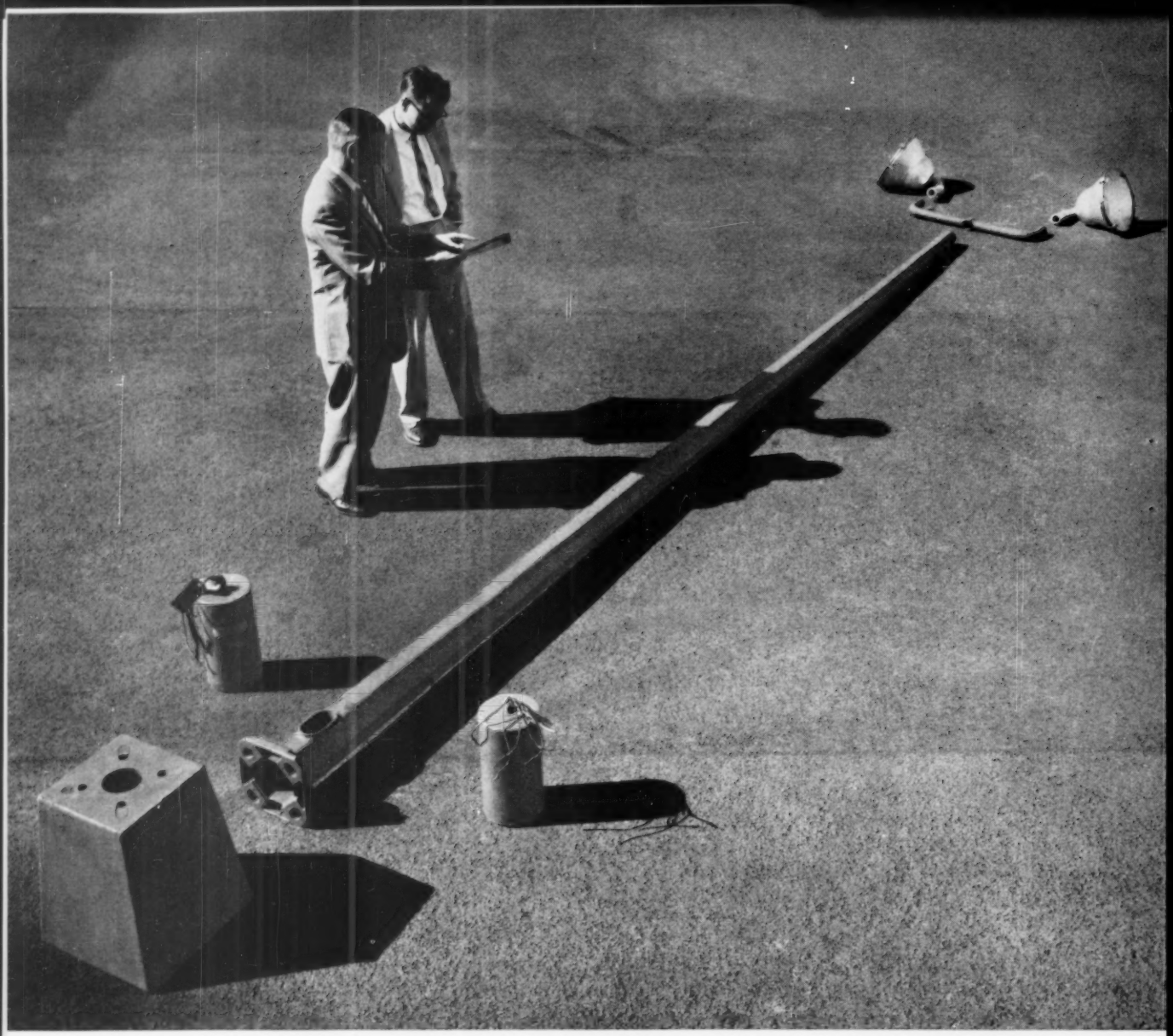
PHOTOELECTRIC LIGHTING CONTROLS

AN AFFILIATE OF SIGMA INSTRUMENTS, INC.



Revere's complete line of matched outdoor lighting equipment means peak efficiency and easy installation

Shown above are the components of a Revere outdoor lighting installation. Every component — pole, base, bracket, lights — is *perfectly matched* to every other component, so the completed installation is exactly right for the job. Components "fit" right to make installation easy, they are structurally matched for strength and balance, and "design-matched" to give peak lighting efficiency for the application.

Revere offers the widest selection of outdoor lighting equipment available from any single source. You can get on-time delivery of Revere fixtures for incandescent, mercury or fluorescent lighting, as well as hinged, rigid, separable poles and accessories. Ask your wholesaler about the advantages of specifying Revere equipment.

Write for catalog of Revere's complete line of matched outdoor lighting equipment.

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In Canada: Curtis Lighting, Ltd., Leaside, Toronto, Ontario

Tabulating punched-card accounting data by machine.

Responsibility Accounting At Seattle City Light

By ORIE L. BEAUGHAN
Machine Accounting Mgr.
Seattle City Light

Progressive utilities recognize that an adequate accounting system is needed for proper operation; this means utilizing all new available accounting techniques. The City of Seattle's Department of Lighting is now embarking on its second major improvement in five years to maintain its accounting operation at peak level. In 1954 the Department adopted machine accounting; on January 1, 1960 it embarked on a new responsibility reporting system, designed to furnish management with information to control more effectively the expanding operations of the utility.

The rapid growth of City Light has enabled us to serve a greater number of customers at a constantly diminishing unit cost. Continued future growth will assist us in maintaining our basic objective of more service at lower cost. However, growth of any organization presents two sides to management. The unfavorable side of the story includes larger and more complex organizational problems, longer communication channels, the need for long-range construction programs, increased capital financing requirements and a multitude of related problems peculiar to large-scale enterprise.

In the face of currently rising costs these problems are compounded to the extent that management decisions based on inadequate or misleading information could easily lead to the destruction of our basic objective: to serve our customers at the lowest possible cost. In recent years it has become increasingly obvious to us that the familiar commission accounts and the related management reports could not serve the purposes of a large and complex organization. Although excellently suited to provide general operating comparisons between utilities and as a basis for rate-making, this system does not adequately fit City Light's organizational structure. We require a tailor-made accounting and reporting system which will provide for the collection of direct costs in each organization unit, giving each supervisor the information over which he has control. The responsibility-accounting system started January 1, 1960, is designed to meet these objectives.

To assist in developing and installing its responsibility-accounting system, the Lighting Department in 1958 engaged as consultants the firm of Peat, Marwick, Mitchell & Co. Procedures of the new system were superimposed on the "uniform system of accounts" methods prescribed by the Division of Municipal Corporations of the State Auditor's office and used generally throughout the electric-utility industry.

Preparations to install the new accounting system were in progress late in 1958, concurrently with an extensive reorganization of accounting activities which reduced the number of sections from eight to five and created a new section charged with internal auditing functions and the preparation and administration of the Department's annual budget.

The Lighting Department's budgeting — beginning with the 1960 budget, prepared in 1959—became a part of the new system which was

(Continued on page 146)

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Whatever the season, wherever the road . . . it's always the right time to adequately light your highway hazards. Protect the public and you protect yourself.

NEW! DIETZ HAZARD WARNING PLANNER

A Practical On-the-Job Tool! Quickly and easily shows how, when, and where to use each type of warning light for maximum safety under all weather conditions and all types of roads and speeds.

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Use Dietz Lanterns to locate hazard in relation to driver's position. Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use Dietz Torches to guide driver around the hazard. Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene.

R. E. DIETZ COMPANY
Dept. 96, 225 Wilkinson St., Syracuse 1, N. Y.

Go DIETZ and you go Safely

(Continued from page 145)

operative at the end of 1959 when mechanization of responsibility-accounting operations was completed.

The principal elements of accounting now cover all the operations; all are mechanized, using IBM punch-card equipment. The application of punch-card processing to accounting operations is shown by the beginning dates:

January 1954—revenue accounting
July 1955—payroll
January 1956—stores accounting
July 1957—accounts payable
January 1958—cost accounting
January 1960—general ledger
January 1960—responsibility accounting and reporting

Revenue Accounting: The punch-card billing operation utilizes Mark-Sensed meter reading. The Mark-Sensed meter cards are made by Globe Ticket Co. to rigid specifications so that they can be processed by the IBM machines to automatically produce the customer's punched-card bill with punched stub. During this process various controls are used to check the accuracy of the operation. The punched stub of the bill is used to post cash payment mechanically.

The operation includes computation of the bill on the IBM 604 calculator, in addition to accumulation of statistics for accounting and other purposes. Types of statistics provided include the following:

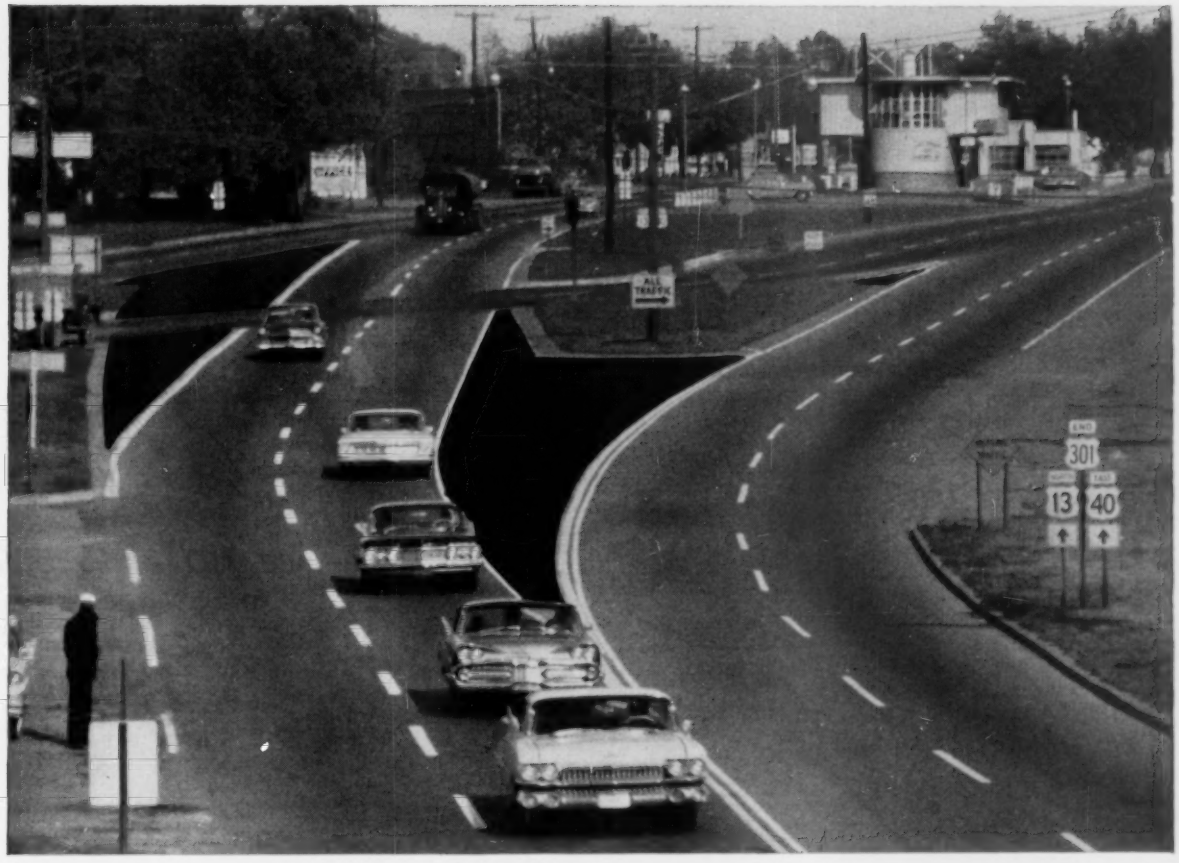
Transformer Loading
Rate Statistics
Credit and Collection Information
Revenue Accumulation

The system consists of 262,000 meters and 232,000 customers; 209,000 of these customers are billed on a bi-monthly basis and the remainder are billed monthly. Bills are rendered on a daily cycle; approximately 6,500 are mailed each day. Follow-up collection notices on delinquent accounts are prepared mechanically in accordance with City Light credit policies.

Operating revenues of the Lighting Department for 1958 totaled $33,806,887, exceeding comparable 1957 revenues by $949,231 or 2.89%.

Accounts Payable: This operation consists of paying the vendors, twice monthly. Some 1,000 payments a month are made. The documents are prepared from vendors' invoices from which individual cards are punched. These cards are used to

(Continued on page 148)



COLOR ADDS A NEW DIMENSION FOR SAFER HIGHWAY MARKING

...Parlon keeps it bright

Colored traffic paint has been in use for several years as a special signal—for instance on the green crosswalks used in so many communities to protect school children and pedestrians. Here is an extension of that application, being used with notable success by an Eastern state on its most heavily travelled highways.

The use of color—a brilliant green approximating the grassy areas of island and median strip—provides a distinctive run-out area on the pavement before the vehicle comes in contact with curb or barrier. This is particularly effective where traffic-stream divergences, cross paths, and other unexpected pattern irregularities exist to confuse the high-speed motorist. The color areas advise the motorist of the impending change, guide him to the correct lane markings, and give, where necessary, a safe haven for stopping before the curb is mounted.

In these new uses for color on street and highway surfaces, as in all conventional striping, laning, edge-marking, and stenciling applications, traffic paints made from Parlon® chlorinated rubber can be depended on for long life and for the fast dry that opens the roads to traffic sooner. Ask your regular paint supplier for the test data on Parlon that proves these values. Or, if you prefer, write for a showing of the motion picture "Highway Life Lines" which tells how the right paint can be safely and easily selected and specified.

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
Wilmington 99, Delaware

(Continued from page 146)

prepare warrants for the vendors and to distribute costs to various accounts.

Payroll: City Light pays its 2,000 employees every two weeks. Thus there are 26 payrolls a year. All information is key-punched for pay and labor distribution on an individual basis for each employee and processed on IBM's 604 Calculator.

Material and Supplies: All receipts, issues and returns to stores are processed to maintain an updated balance of all items in stock. This is done three times a month to keep stores information current. Stores cycle inventory cards are prepared and processed as part of this operation. Various reports are prepared such as stores ledger, stock status report, material movement, and material distribution charges to accounts. The charges are distributed to accounts on a monthly basis as they are for each of the accounting operations.

Cost Accounting: This is based on the work-order system. The operation accumulates costs from cards which were previously punched for labor, material, accounts payable, etc. These charges are printed on individual work-order sheets which are used for analysis of cost.

All of the accounting processes are completed by preparing the journal entries at the end of each month for General Books purposes.

The accumulation of costs is the basis for responsibility accounting. These costs are summarized and reported back to division heads and management for comparison with the estimates which are prepared each year. By means of these reports, management is able to control expenditures and to maintain a current familiarity with the operation of the utility. In addition, information is provided for division heads to aid in forecasting their requirements for the yearly budget.

City Light's History

The spirit of the citizens of Seattle which moved them to join together through their city government to obtain better electrical living also moved the people of City Light to strive continuously to provide the best electric service at the lowest cost consistent with sound financing.

In March 1902, the voters, unable to get good street-lighting service at reasonable rates, passed a $590,000 bond issue to establish their own lighting plant. Three years later the Cedar Falls plant, first municipally owned hydroelectric plant in the United States, was erected. The first residential customer was put on the lines in September 1905.

The 1905 beginning rate was 8½ cents per kilowatt hour, less than half the 20 cents charged by the other utilities before the election that established City Light. Rates were lowered steadily until they dropped to one cent per kilowatt hour on the all-electric rate in 1956, one of the lowest rates in the nation. Annual residential use climbed from 206 kilowatt hours in 1910 to 8,063 in 1958.

In 1950 the voters affirmed their confidence in City Light by voting to purchase the Seattle-area properties of the competing private utility, making City Light the area's sole distributor of electric power.

City Light's existing electric facilities built through the years represent an expenditure of nearly $280 million, all built without cost to the taxpayers. ◄◄

Performance plus safety...
Safety — the Plus factor built into PAK-MOR Bodies and Lo Boyes. Roomy, non-skid running boards and handy handholds give pickup men convenient and safe "out of traffic" riding areas. Side Loading keeps men out of danger and PAK-MOR's round barrel keeps loaders in driver's sight at all times.
2453

How to Reduce the Cost of Public Housing

"Methods of Reducing the Cost of Public Housing," a research study carried out by the Pratt Institute School of Architecture under the sponsorship of the New York State Division of Housing, has just been published in book form.

The publication, made possible through a special grant from the Dow Chemical Company of Midland, Mich., covers the investigation of cost-saving ideas in five specific areas of public housing construction and presents recommendations for immediate adoption and future consideration.

The five major areas investigated were: building layout (plan), structure, the exterior envelope, interior partitions and mechanical equipment.

Proposals for immediate action included:

1. *Building Layout*—

a. use regular column spacing, with an estimated saving of 2 to 3% of the total construction cost.

b. use skip-stop elevators, with a saving of $150 per elevator door omitted or $8 for each dwelling unit.

c. use an exterior-corridor plan, saving 1% of total construction cost.

2. *Structural systems*—

a. use light steel framing on some housing projects with regular column spacing, saving 2 to 3% of the total construction cost.

b. use lift-slab construction, saving 4 to 6% per square foot of floor slab in place.

3. *Exterior Envelope*—

a. insulate the present wall construction, saving 19 cents per square foot of exterior wall due to reduced heat loss, with an additional saving of 88 cents per square foot of exterior wall in reduced fuel costs over 50-year life of the building.

4. *Interior partitions*—

a. use plaster on gypsum lath or 3-ply laminated gypsum board, with a saving of 10 to 25% of present partition costs.

b. for bathroom walls around tub, use cement-faced concrete block in lieu of ceramic tile, saving 40 to 60% of the present cost.

5. *Mechanical*—

a. use above-floor bathtub and toilet, saving $5 for each bathroom.

b. use one-pipe mono-flow hot water heating system, saving 16% of present heating system.

Recommendations for future consideration:

1. *Building layout*—use 7'6" ceiling height instead of 8'0", saving 2 to 3% of the total construction cost.

2. *Structural systems*—use pre-cast box frame construction.

3. *Exterior envelope*—use pre-cast concrete sandwich panels, the reduced wall size saving 61% of wall thickness and 70 cents per square foot of wall area in reduced fuel costs over 50-year life of the building.

4. *Mechanical*—use copper tubing with soldered joints, saving 10% of roughing costs; use loop-venting in place of individual fixture venting, saving $22 per bathroom.

The research project which produced this report was carried on by a group of graduate students in the Pratt School of Architecture during

(Continued on page 150)

SANITATION FOR THE NATION
Yours with
PAK-MOR
MANUFACTURING COMPANY
Performance a "must" because of today's high cost of operation. But, performance without safety, is a cost no City or Contractor can afford. PAK-MOR gives you Both — Performance and Safety — at competitive prices. Write for "Performance Plus Safety" details — and the name of your nearby PAK-MOR Distributor.
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PAK-MOR MFG. CO.
P. O. BOX 14147
SAN ANTONIO 14, TEXAS

(Continued from page 149)

the school year 1957-58, under the direction of Professor John H. Callendar, director of research, and with the assistance of Giles Aureli, also of the faculty.

This engineering research study was originally proposed in 1957 by the then Commissioner of the New York State Division of Housing, Joseph P. McMurray, to Olindo Grossi, Dean of the Institute's School of Architecture. Seeking ways and means to combat rising costs in public housing, the Division of Housing asked that the project be approached with particular reference to low-rent public housing. James W. Gaynor, who succeeded Mr. McMurray as commissioner, was equally interested in the study and continued to support it.

Copies

Copies of the report may be obtained free from the Plastics Merchandising Department of the Dow Chemical Company, Midland, Mich. The supply is limited.

They provide the most sanitary and economical washing facilities. A touch of the foot-treadle, and tempered water is supplied—for two—from the central Sprayhead. Remove the foot and water is immediately cut off. No waste, no overflowing—no left-over unsightly water.

SAVE SPACE, WATER, AND INSTALLATION COSTS...

For more facilities in less space—for reduced installation costs and maintenance—and maximum sanitation—install Bradley DUO-Washfountains.

Three heights—31″; 29″; and Junior, 27″ all shipped with bowl and panels, assembled for quick installation, fully described in Bulletin K1204 just off the press.

BRADLEY
WASHFOUNTAIN CO.,
2333 W. Michigan St.,
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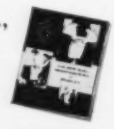
Standard Height, 31″

Junior Height Duo, 27″



BRADLEY Duo Washfountains

Distributed Through Plumbing Wholesalers

California Cleans Up Auto Exhaust

California is the first state to take legislative action against automobile pollution of the atmosphere.

This new law, Assembly Bill #17, promises the virtual end of smog in the Los Angeles Basin within five years, *if*:

- **Devices are developed and installed as scheduled and**
- **Strict control is maintained over pollution from industry and the disposal of rubbish.**

The bill requires devices on all new cars throughout the entire state, but allows counties not affected by smog to exclude themselves from the provisions concerning used cars. In order to exclude a county, its Board of Supervisors must establish at a public hearing that there is no air pollution problem in that county. Every two years thereafter, a hearing must be held again to reaffirm the absence of an air pollution problem.

As a practical matter, the metropolitan counties, which are most likely to come under the law, have vehicle registrations of about 6,600,000, while the total registration in the non-metropolitan counties is only about 1,400,000. Perhaps not all of these non-metropolitan counties will be excluded, so that actually more than seven out of every eight now-existing cars in the state may be affected by the law. This ratio will improve steadily as old cars are replaced by new cars, which must have devices regardless of the county of location.

The new law sets up a time table for installation of devices. Measured from the day a state board certifies that at least two devices are approved, this is the schedule:

Within one year these anti-smog devices must be on:

- **All new vehicles throughout the state, when first registered**
- **Used vehicles, located in a county affected by the law, if there is a transfer of ownership**

Within two years, they must be on all used commercial vehicles, located in a county affected by the law.

Within three years, they must be on all motor vehicles, located in a county affected by the law.

Automobiles contribute daily about 1,500 tons of hydrocarbons,

(Continued on page 153)

Protect your investment in **DIE EMBOSSED** *Signs*

Die Embossed signs are easy to refinish. A new coat of paint makes the background look like new . . . a roller brings out letters and borders to their original brilliance. The job can be done in minutes while the sign remains on the post.

- S. G. ADAMS COMPANY, ST. LOUIS 3, MO.
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- LYLE SIGNS, INC., MINNEAPOLIS, MINN.
- MIRO-FLEX CO., INC., WICHITA, KANSAS
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In ten thousand communities DIE EMBOSSED traffic signs have been the standard for over thirty years. Uniformity of size, shape, wording and color is assured by many manufacturers who help you protect your past investments. Strength, rigidity, angle visibility, low cost — the best for less — is yours with DIE EMBOSSED signs.

Die Embossed Signs *are your* Best Buy

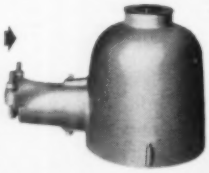
PEMCO LIGHTING

BACKED BY ALMOST 80 YEARS EXPERIENCE

STREET & HIGHWAY LIGHTING

One-piece NEMA standard side entrance or top entrance aluminum head with transformer or choke coil—for 100, 175 or 250 watt mercury lamp. Illustrated is side entrance head with NEMA standard twist lock adapter and Fisher-Pierce 6600A Photo-Control. For use with Class "A" and "B" reflectors. Request information on conversion kit for existing NEMA standard incandescent heads.

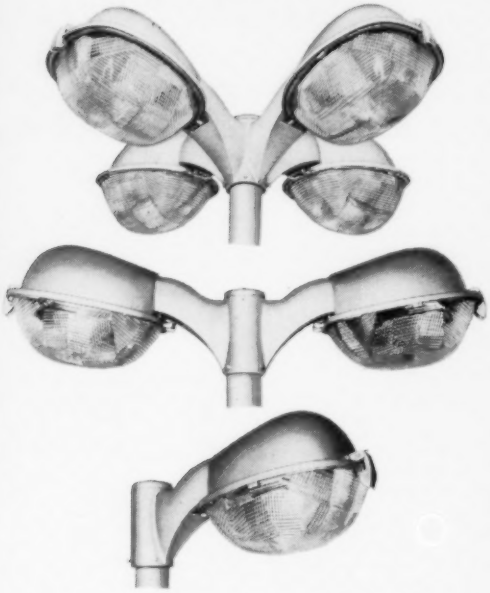
One-piece NEMA standard aluminum head with NEMA standard twist lock adapter for Photo-control. Also available with 1¼" plug. Junior style heads with NEMA standard twist lock adapter are also included in the Pemco line.



Style 80 Standard Enclosed Luminaire for series or multiple circuits. IES Types I, II, III, IV and V. Hinged or wedge band. Fluted alzak reflector. Also available with Style 20 Top Entrance Head. For incandescent or mercury lamps, with or without adapter for Photo-control (see above). There is a variety of Pemco Open Reflectors to fit both Standard and Junior Heads.

Three styles of Pemco Mercury Luminaires, with or without NEMA Standard twist lock adapter:
Style 67 for 250 watt Mercury Lamp—IES Types II and III.
Style 68 for 400 watt Mercury Lamp—IES Types II, III and IV.
Style 69 (with built-in ballast) for 400 watt Mercury Lamp—IES Types II, III and IV.

AREA LIGHTING



Pemco 4-Lite All aluminum Mercury Area Luminaire for high level illumination using four 400 watt mercury lamps, and matching 1-Lite and 2-Lite Luminaires. Highly efficient—unusually attractive.
Other Pemco Area Luminaires include 36", 48", 60" and 72" dia. aluminum reflectors with ball globe for one 500 to 1500 watt incandescent or 400 to 1000 watt mercury lamp . . . Fluorescent Area Luminaires . . . Walkway and Shrubbery Luminaires . . . Incandescent and Mercury Floodlights.

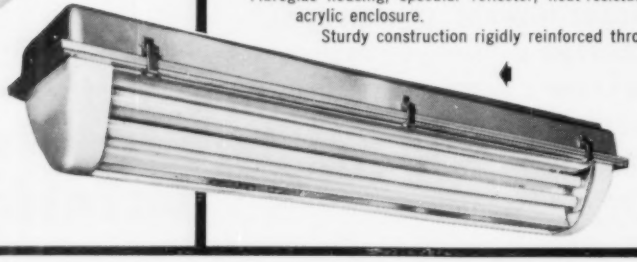
When requesting literature and catalogs be sure to specify on what type outdoor lighting.

PEMCO LIGHTING HAS BEEN QUALITY LIGHTING SINCE 1882

PHILADELPHIA ELECTRICAL & MANUFACTURING COMPANY

1200-36 N. 31st St. P.O. Box 8359
Philadelphia 21, Pa.

Pemco Metropolitan Fluorescent Luminaires—
Style 48 for 2 or 4—48" 800MA or 1500MA lamps.
Style 72 for 2 or 4—72" 800MA or 1500MA lamps.
Fibreglas housing, specular reflector, heat-resistant clear acrylic enclosure.
Sturdy construction rigidly reinforced throughout.



(Continued from page 150)

(exclusive of evaporation loss), about 450 tons of oxides of nitrogen, and about 9,000 tons of carbon monoxide. Devices and control systems capable of reducing hydrocarbons and oxides of nitrogen by 90%, and carbon monoxide by 70% would cut these emissions to: hydrocarbons, 150 tons; oxides of nitrogen, 45 tons; carbon monoxide, 2,700 tons. In round figures, other sources contribute daily about 600 tons of hydrocarbons and 300 tons of oxides of nitrogen. Carbon monoxide emissions from all non-automotive sources will amount to 350 tons as soon as certain installations are completed.

The result in the Los Angeles Basin should be a marked lessening in smog. It should be particularly evident because Los Angeles County has already done much to clean up its other sources of air pollution, industry and the disposal of rubbish, and in this way is keeping more than 3,300 tons of pollutants out of the air daily. In areas where these other sources have not been brought under control, the control of autos alone may not be enough to prevent some incidents of noticeable air pollution.

SMITH GRISWOLD
Air Pollution Control Officer
Los Angeles County, Calif.

Inter-City Transit Serves Many Towns

The 1959 civil engineering report for the Washington Metropolitan Area recommended that Washington build about two billion dollars worth of freeways, parkways, major streets and parking facilities, together with one-half billion dollars worth of rapid transit facilities, including 34 route-miles of rail lines and 66 route-miles of facilities for express bus operation on freeways.

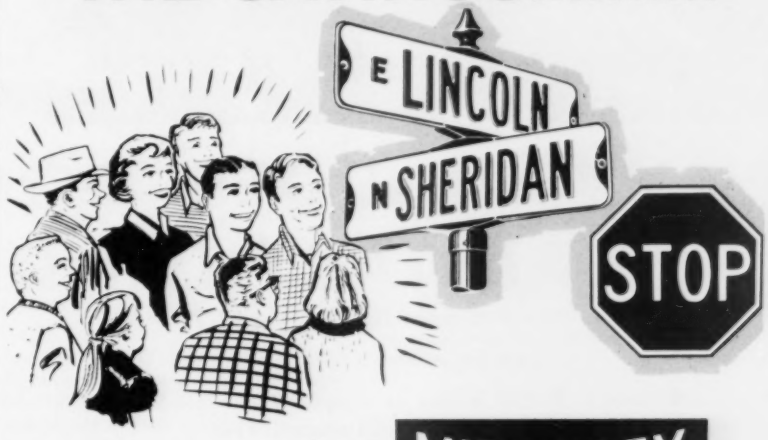
The principal findings were, first, that, even if a large system of high-speed rail and bus lines were built, a much larger system of highways than now contemplated will be necessary by 1980. No rapid transit system could be devised for Washington, it was found, which would be an adequate substitute for a comprehensive system of freeways and parkways since a large proportion of highway traffic consists of trucks plus automobiles.

No system of highways alone could serve the total transportation needs of the Washington metropolitan area by 1980. Freeways will have to be supplemented by high-speed transit. If only local transit service were made available, use of autos would be so heavy that critical sections of the freeway system would have to be built 10 to 18 lanes wide. There is serious doubt, furthermore, that local streets could serve adequately as feeders and distributors of freeway traffic if more than eight expressway lanes were built.

Finally, it was pointed out by the De Leuw, Cather & Company report that Washington will exist, not just for the next two decades, but for hundreds and perhaps thousands of years! Facilities built in the next 20 years should provide for mass transportation vehicles of any type. An eight-lane freeway used exclusively by automobiles serves 9,000 people per hour in each direction. The addition of rapid transit can readily increase this to as much as 50,000.

WILLIAM R. MCCONOCHIE
Chief Engineer
Traffic and Transit Department
De Leuw, Cather & Company
Chicago, Ill.

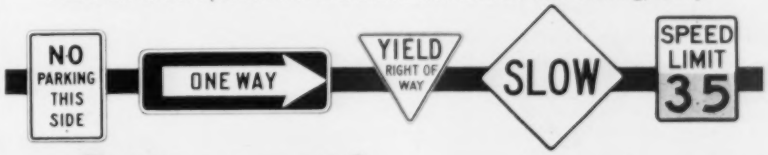
EVERY ONE CAN SEE THE SAVINGS.....



IN MIRO-FLEX

TRAFFIC CONTROL SIGNS BECAUSE THEY LAST SO LONG!

More cost-conscious communities choose **Miro-Flex** — because **Miro-Flex** signs are embossed and quality-finished, to last years longer than ordinary flat-surfaced signs! Embossed design gives extra strength and rigidity — raised letters are easier to read. **Miro-Flex** offers a complete line of street name assemblies and traffic control signs — at prices you can afford. Street name assemblies available in rust-proof steel or aluminum. Write for free catalog, today!



The MIRO-FLEX CO., INC. 1824 EAST SECOND WICHITA 14, KANSAS

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd.. Emsworth, Pittsburgh 2, Pa.

JACKSON, MICHIGAN

NEW D4C DOES "DOUBLE DUTY" ON SANITARY LANDFILL

A new D4 Series C Tractor is busy on a sanitary landfill operation for the City of Jackson, Michigan. This landfill covers eight acres and serves more than 75,000 people living in Jackson and the surrounding area. At the completion of the operation the area will be converted into recreational grounds for an intermediate school now under construction. Both are scheduled to be finished in 1961.

The D4C's first duty is to 'doze refuse into low areas, compact and cover it with earth. Its second duty is to excavate, transport and store cover material with a scraper. Haul distances range between 100 and 600 feet and the depth of the fill varies from five to 11 feet.

Behind the City of Jackson's decision to buy a new D4C were two factors: (1) successful experience with Caterpillar equipment and, (2) design features of the new Series C which met the city's requirements.

Today, when tax dollars must go further than ever, you can count on the new D4C to deliver high production at low costs with less maintenance and longer life. Some of the new features are listed to the right. For complete facts, see your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

NEW INTEGRAL HYDRAULIC SYSTEM of the D4C does away with externally-mounted controls on front or rear of tractor – permits convenient routing of hydraulic lines to bulldozer or implement cylinders.

HIGH GROUND CLEARANCE – 14 inches – highest in class! This, coupled with clean design underside, speeds work over rutted or debris-strewn ground.

NEW 63 HP CAT D330 ENGINE – provides 25% more lugging ability at the drawbar. Plus improved starting engine for fast starts.

TIME AND COST SAVING MAINTENANCE FEATURES – New dry-type air cleaner keeps out 99.8% of the dirt under the most severe conditions; cuts maintenance time as much as 75%.... New lifetime lubricated track rollers with exclusive floating ring seals require no servicing.... Famed Cat fuel system is adjustment-free.... Oil clutch (optional) delivers up to 2000 hours' service without adjustment.

NEW COMFORT, CONVENIENCE, SAFETY – Clean open deck, convenient controls, forward-reverse lever (exclusive in D4C class) and comfort-contoured seat add up to top operator efficiency.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUY FOR YOUR TAX DOLLARS

In this equipment yard are a Hough rubber-mounted shovel-loader, a Huber-Warco motor grader and a Link-Belt backhoe.

←

This Barber-Greene vertical boom ditcher teams up with the Link-Belt backhoe to install sewers.

Big Units Do Big Jobs In Atlanta

By **RAY A. NIXON**, Chief Dept. of Construction

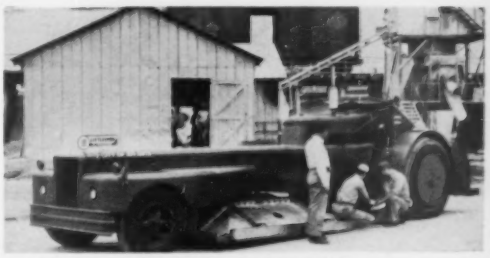
An indication of the scope of street maintenance and repair operations in Atlanta, Ga., can be found in recently released figures on production of asphalt and concrete. During an 11-month period ending December 1959, the maintenance division of the city's department of construction produced a total of 28,400.5 tons of asphaltic material and 16,040.33 tons of concrete at a total cost of $351,398.48.

Almost 24 miles of streets were resurfaced during 1959 and city forces accomplished nearly a third (118,255.46 square yards) of it. Private contractors, county and state completed the balance. The statistics add up to a sizable operation and Atlanta uses big equipment units that do a big job. A 32-ton trailer with a 9x16-foot platform transports heavy excavating units, large-size sewer pipe and other heavy objects from job to job. Rugged, 2¼-yard shovel-loaders load material in the yard, do light grading and provide dirt pick-up. A 12-foot motor grader maintains unpaved streets. A one-yard backhoe and job-sized trencher do sewer excavating. The city even runs its own six-yard truck mixers from two concrete batch plants that supply concrete for street repairs, bridge repairs, for basing material for sewer and utility cuts and other construction.

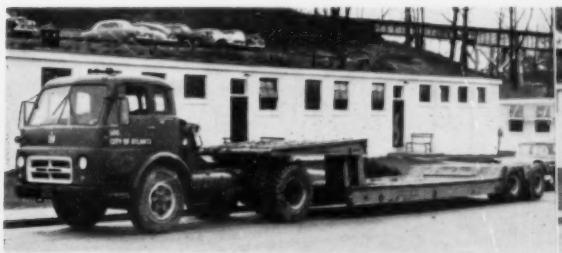
Finally, the city owns and operates its own asphalt heater-planer, to level humps and waves in asphalt paving—particularly at bus stops and traffic stops—and to plane down materials next to the curb before resurfacing. This practice eliminates covering too much of the curb face on the resurfacing jobs.

Atlanta has found that its policy of "not sending a boy to do a man's work" pays off. ◄◄

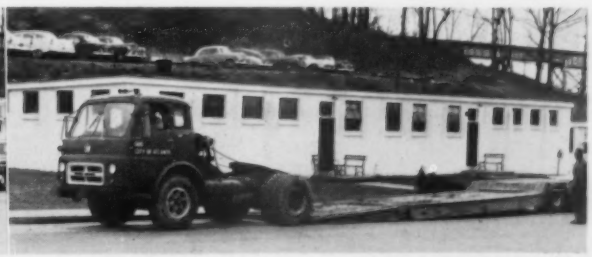
This Ford truck with a Smith agitator hauls concrete from Atlanta's two concrete mixing plants.



A Littleford asphalt-planer is used to iron out irregular pavement edges at the curbs.



A big International truck-tractor with a 15-ton Tulsa winch pulls a Martin 32-ton trailer with a folding ramp hitch.



The trailer provides a 9x16-foot platform for heavy equipment and for hauling large pipe and other materials.

When it comes time to appoint a trustee or fiscal agent for revenue bonds, The Chase Manhattan Bank is at the service of state, county and municipal authorities. Chase Manhattan has the staff and experience to handle this function as trustee or fiscal agent in cooperation with banks in the areas where the projects are located. For complete details write: Corporate Trust Division, The Chase Manhattan Bank, 40 Wall Street, New York 15.

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

California city wins where many have failed

Santa Clara Bond Issue Public Relations Turns Voter Tide! Here's How It Was Done

When voters in Santa Clara, Calif., streamed to the polls last fall and approved a $20,700,000 bond issue, civic and city leaders all across the country took note. The success of the proposals was something of a phenomenon—especially in an area where other municipalities and school districts have been meeting stiff opposition to capital improvement expenditures.

What happened in Santa Clara? City Manager Loyd Brady sums up the explanations of those persons closest to the successful campaign—city council members, the city staff, and a 100-member citizen volunteer group. They believe these were key factors in the victory:

Long-term preparation; a short campaign — Although the formal campaign lasted only three months from the official kick-off, public acceptance had been carefully cultivated over a period of nearly three years.

An attitude of confidence in the citizenry—Says Mr. Brady, "From the beginning, the entire city organization believe that the people would meet their responsibilities if given information for intelligent action."

Complete integrity in campaign promotion — The principal theme used was that bond financing is, in fact, simply buying municipal facilities on an installment basis.

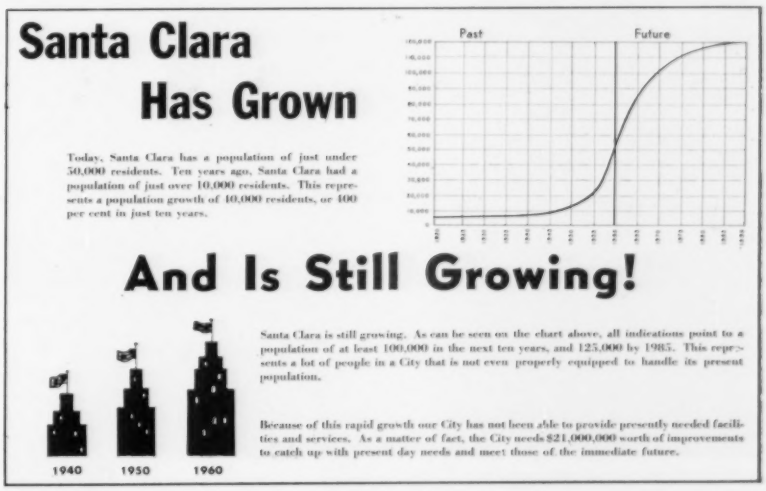
While the capital improvement needs of fast-growing Santa Clara (1950—10,000 people; 1960—60,000) had become acute and were, in some cases, self-evident, campaign education was based on a careful and complete study and recommendations from an engineering and planning firm. The city also retained finance consultants to "determine the city's ability to amortize the proposed bonds."

Studies indicated that Santa Clara needed expansion of the municipal park system and recreational program, widening, repaving, and general overhaul of the street and traffic systems, more street lighting, storm drain construction in two sections of the city, new fire stations and equipment, a new main library, a yard for city vehicles and equipment, city participation in a multi-million-dollar sewage treatment plant, increased water storage capacity, and additional electric substations and enlarging of the central supply station.

The financial report indicated that the city could repay the bonds within the existing revenue structure with one exception. The sanitary sewer program would mean an increase of from 35c to $1.25 for each householder. "This was clearly and frankly disclosed to the people," Manager Brady reports, and, "incidentally, this particular issue car-

(Continued on page 159)

Mayor Joseph J. Ribeiro (on ladder) and Councilmen Maurice E. Dullea, Robert H. Simons, Austen D. Warburton and James J. Viso exult as secretary Bette McKinnon posts the election results.


Santa Clara Has Grown
Today, Santa Clara has a population of just under 50,000 residents. Ten years ago, Santa Clara had a population of just over 10,000 residents. This represents a population growth of 40,000 residents, or 400 per cent in just ten years.
Past
Future
And Is Still Growing!
Santa Clara is still growing. As can be seen on the chart above, all indications point to a population of at least 100,000 in the next ten years, and 125,000 by 1985. This represents a lot of people in a City that is not even properly equipped to handle its present population.
Because of this rapid growth our City has not been able to provide presently needed facilities and services. As a matter of fact, the City needs $21,000,000 worth of improvements to catch up with present day needs and meet those of the immediate future.
1940
1950
1960

Campaign literature which helped to bring victory.

BIG SIX PERFORMANCE

GIVES YOU SIX BIG BENEFITS

1. **FASTEST OPERATION**—Crew starts reloading in just 4 seconds... full cycle takes only 10 seconds.
2. **GREATEST COMPACTION**—Direct thrust compaction packs more per yard than any competitive unit.
3. **BIGGEST LEGAL PAYLOADS**—Biggest loads on any given chassis for two reasons. First, dead weight is cut to a minimum; second, telescopic hoist eliminates heavy sub-frames and improves weight distribution.
4. **LARGEST, LOWEST HOPPER**—Big 1½ cubic yard, 74-inch wide hopper, plus low loading height.
5. **SAFEST, MOST DEPENDABLE**—Controls are simple, foolproof. Operator has positive control. Fewer moving parts, less linkage, few adjustments.
6. **GREATEST ECONOMY**—Biggest hopper and fastest packing cycle cut fuel costs and equipment wear.

THE LOAD-PACKER® 600 Learn more about the BIG SIX performance of the Load-Packer 600 from your GarWood-St. Paul distributor. You'll find he's a top truck equipment specialist.

GarWood
INDUSTRIES, INC.
Wayne, Michigan
Richmond, California

Continued from page 157)

ried by the biggest majority of all."

Near-saturation publicity which included: dozens of appearances by well-informed speakers, the erection of large signs, 94 of them, at proposed improvement locations and other strategic spots throughout the city (six billboard-size signs were donated by a local sign company), radio programs including foreign-language broadcasts, television, and newspaper advertising. Endorsements from labor, management, civic organizations, former city officials, old-timers, newcomers were solicited, received, and published. Churches urged their congregations to give careful consideration to the bond proposals as a matter of good citizenship.

Basic facts—clear, in large type, and with easy-to-read graphs—were capsuled in a big, 23x29-inch printed information sheet that folded down to 11x7-inches. This folder showed how Santa Clara had grown, what improvements were needed, how the bonds could be repaid, and it urged "Vote 'yes' on all eleven."

Volunteer committees of citizens; staff assistance—One hundred citizens were recruited from various organizations of the community. This group was divided into five major committees: steering, finance, publicity, speakers, and election.

Staff assistance was set up for each committee insuring, Manager Brady feels, "prompt completion of assignments." Briefing sessions were held and all groups were thoroughly grounded in ways and means of accomplishing their assignments. Precise objectives and target dates were established. A budget was set up for each unit.

Stifling potential opposition — a cadre of "trouble shooters," including members of the city council, watched for and were advised of groups or individuals who had doubts about the proposed improvements or who, for any reason, were potential opposition. Every effort was made to explain positively whatever was misunderstood. What could have developed as real opposition was, in most instances, cleared up or turned into support.

Election Day follow-through. This was the pay-off. The campaigners didn't rest on election day; they redoubled their efforts. What they did in Santa Clara is worth detailing and is adaptable for bond referenda in almost any community.

A climactic voluntary telephone crusade was organized by the election committee. Four hundred people, 250 women and 150 members from the volunteer firemen and policemen's group, took part. Under a criss-cross plan, each potential voter received two or three calls urging him to vote for the proposals.

Phone numbers of Santa Clara's 16,000 registered voters were divided among the ladies. Each lady worked from her home phone under district captains located at a central headquarters.

Three volunteer policemen and firemen were assigned to each of the 48 voting precincts. One man was assigned to phone calling, the other two responded to requests for transportation and baby sitters.

The first round of calls was completed by mid-afternoon. The list of those who had already voted was checked at the polling places and marked off phone-callers' lists. Then the criss-cross phoning from both groups started all over again.

Results: 8,000 persons voted—a 50% turnout compared with 30% in other city elections. The majority of voters in favor of the bond issues was seven to one. ◄◄

control

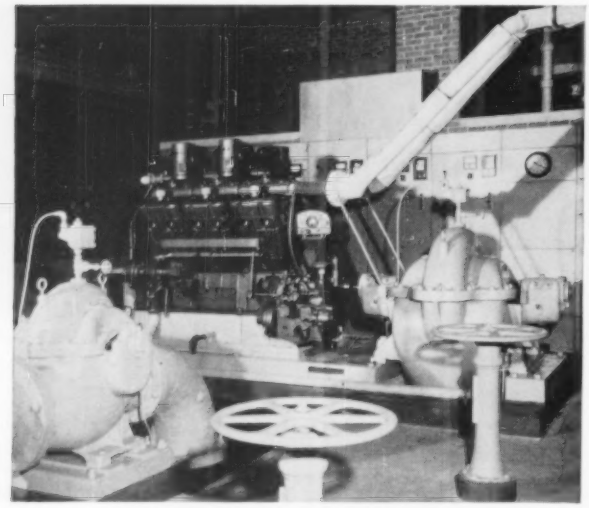
for algae and aquatic weeds

In small amounts, Triangle Brand Copper Sulfate controls algae growth and kills some of the more troublesome aquatic weeds. They disintegrate where they are, which prevents downstream infestation or clogged waterways.

In sewage pipes, Triangle Brand Copper Sulfate can be used in such low concentrations to control root and fungus growth that surface trees remain unaffected.

Two informational booklets, "The Use of Copper Sulfate in the Control of Microscopic Organisms," and "Copper Sulfate for Root and Fungus Control in Sanitary Sewers and Storm Drains," available on request.

Phelps Dodge Refining Corp.
300 PARK AVENUE, NEW YORK 22, N. Y.

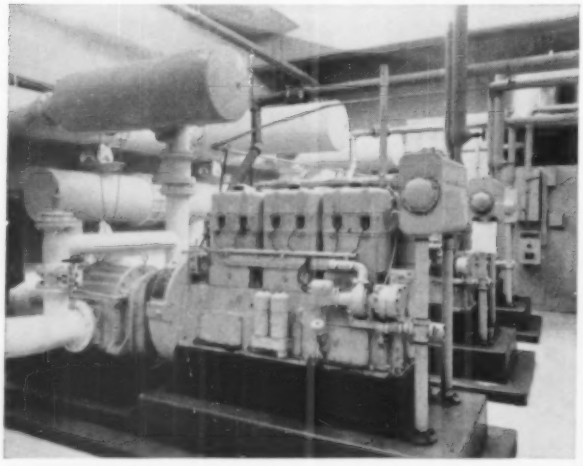


EAST—North Stamford, Connecticut—water pumping system.

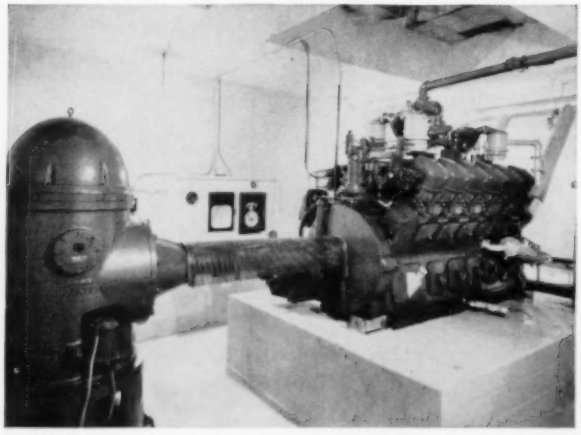
COAST-TO-COAST

All over the country, municipal and utility plants use ROILINE engines in water supply systems, waste disposal services, and for power generation. Operating on natural or LP gas, or gasoline, ROILINES have been standard in the field for many years.

ROILINE ENGINES



MID-CONTINENT—Waste disposal power in Enid, Oklahoma.



WEST—Rivera, California—deep well pumping power.

NATURAL GAS RATINGS					600	800	1000	1200	1400	1600	1800	2000	2200	2400
MODEL	Bore & S.	Cyls.	Displ.	Torque–rpm	BRAKE HORSEPOWER AT ENGINE SPEEDS INDICATED									
H570	4⅝ x 4¼	8	570	457-1400	. . .	68	86	104	122	139	156	172	188	198
H884	5⅜ x 4⅞	8	884	710-1400	. . .	105	133	162	189	216	241	261	273	282
F1500	6¾ x 7	6	1503	1090- 600	125	165	200	215						
H2000	6¾ x 7	8	2004	1490- 650	170	225	270	290						
L3000	6¾ x 7	12	3006	2200- 700	250	335	405	435						
L3460	7¼ x 7	12	3468	2500- 900	285	380	474	555	592 @ 1350					
L4000	7.54 x 7.5	12	4000	3020- 600	345	447	550	635						

With oil pump, water pump, magneto, air cleaner, carburetor, and exhaust muffler. Hp shown is maximum.

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ARIZONA, Casa Grande, Engine Service Company, Inc.
ARKANSAS, Paragould, Wonder State Manufacturing Co.
CALIFORNIA, Long Beach and Bakersfield Engine & Equipment Company
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KANSAS, Garden City and Great Bend Carson Machine & Supply Co.
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NEW YORK, Syracuse, Schenectady and Lisbon J. C. Georg Corporation
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OKLAHOMA, Oklahoma City and Tulsa Carson Machine & Supply Co.
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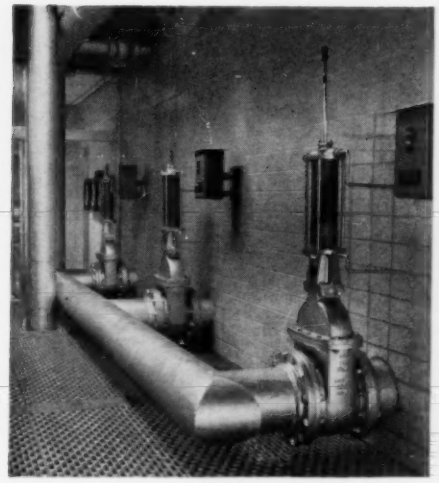
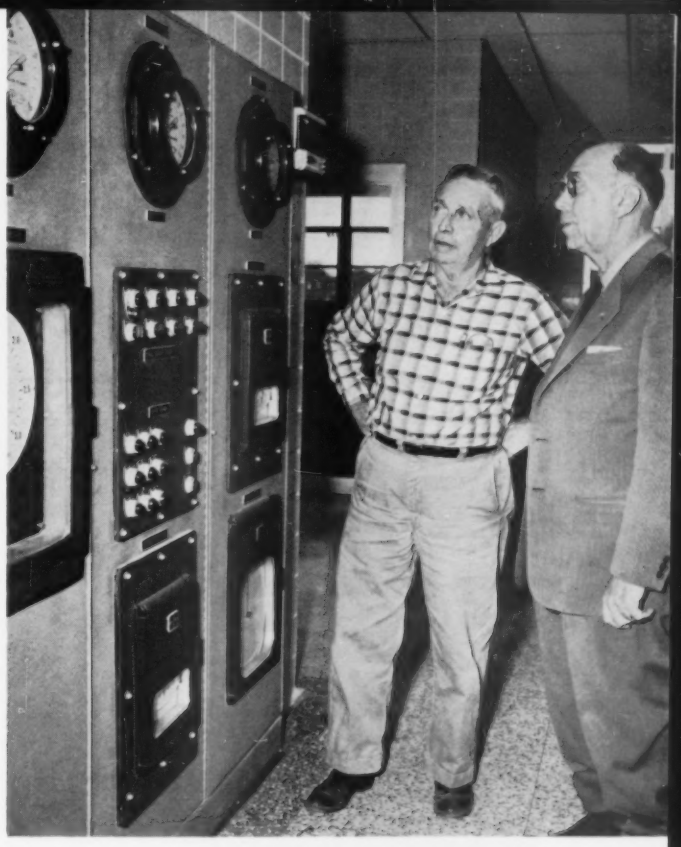


Note the clean lines of the welded steel pipe leading to the filters. Similar piping was used throughout the plant.



The author (left) and consulting engineer Henry E. Cook, look over the main instrument and control panel installed by the city's electrical department employees.

Pella's Built-to-Order Water Plant

By **E. B. SCHREINER**
Superintendent
Water-Sewer
Pella, Iowa

When you can't find what you want, the next best thing is to design it yourself. This we did, and the result is an iron removal and softening plant different from other installations, both in its exterior appearance and its interior function.

In 1957 the Pella City Council instructed Henry E. Cook, consulting engineer of Ottumwa, Iowa, and the writer to design a water treatment plant for the city and submit a report. With certain ideas in mind, we consulted the State Board of Health and visited lime-soda and zeolite softening plants in several cities. Dissatisfaction with the cost of labor required to maintain and operate these plants led us to design an entirely new plant for our purpose.

Structurally, the plant had to resemble a ranch house, for the site is only several blocks from a local college and is surrounded by residential areas. Its function was to provide iron removal and zeolite softening under gravity flow from 0 to 1,000 gpm. Operation was to be automatic, using anhydrous ammonia instead of caustic soda for pH control.

With these characteristics in mind we sought the technical advice of General Filter Co. of Ames, Iowa; Permutit Co. of New York; and Culligan Zeolite of North Brook, Ill., as to the friction loss through rapid sand filters and zeolite beds of different thicknesses. The Phillips Petroleum Co. of Bartlesville, Okla., supplied information regarding the use of anhydrous ammonia for pH control.

Fitting all the components in a ranch-type house structure without making it too large required placing the aerator in the gable and the

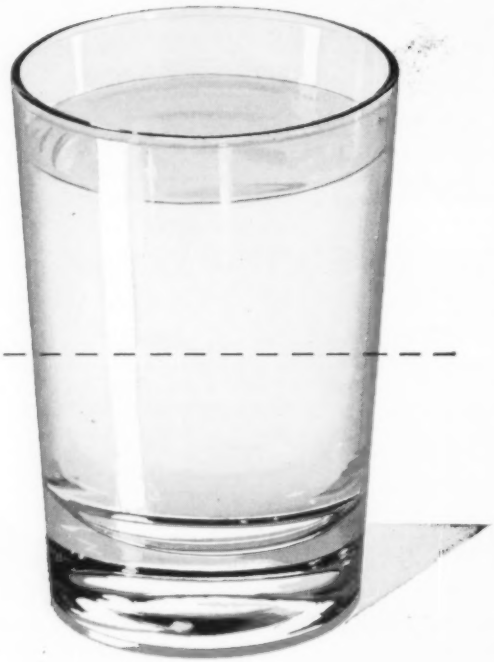
(Continued on page 163)

Built to resemble a ranch house, Pella's water plant fits into the residential neighborhood in which it is located. Landscaping will be provided this year.

NOW...

cut new filtration plant costs 45%

Increase clear water capacity 100%



Specify Celite diatomite filtration

You can now double the potable water capacity available to your growing community and cut the installation cost of new filtration nearly in half. How? Specify diatomite filtration. You'll reduce land and construction costs because diatomite systems need only ¼ the housing space of equivalent-capacity sand plants. In fact diatomite systems are so compact, they can sometimes be added to existing plants.

If you're considering water filtration for the first time, it makes good financial sense to go Celite* diatomite all the way. An actual test installation by Johns-Manville has proved that a diatomite filter station can be installed for 45% less than a sand filter station of equal capacity.†

What's more, Celite will usually give better water clarity under comparable conditions. Turbidity is far lower. More suspended solids, including all floc, amoebae and algae, are removed. And a Celite diatomite system is easily operated and maintained by regular municipal water personnel.

Mined from the world's purest commercially available deposit, Celite is carefully processed for complete uniformity. Call your nearby Celite engineer for complete information on Celite's wide range of grades; he will gladly assist with your particular problems. And write today for FREE informative reprint.† Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

†Comparison Studies of Diatomite and Sand Filtration by G. R. Bell, Journal American Water Works Association, September, 1956.

JOHNS-MANVILLE JM PRODUCTS

(Continued from page 161)

exhaust in the chimney of the building. Raw water is pumped to the treatment plant from shallow wells in the Des Moines river bottom several miles southwest of the city, entering the forced-air type aerator at elevation 99.83 (local datum). A splitter box with three adjustable weirs set at elevation 89.75 divides the effluent from the aerator into three equal parts to provide equal flow through the three filters.

The filters, each 8 feet by 14 feet in area and 12 feet deep exclusive of the underdrains, are of the rapid sand type rated at five gallons per square foot per minute. Filtered water passes through another common header containing a second splitter box with four adjustable weirs. These square-notch weirs with side adjustment are all set at the same elevation.

Water passing over three of the weirs goes to the three softeners, while that passing over the fourth weir mixes with the softened water to bring the finished product to the desired hardness of from four to six grains.

The softeners consist of concrete tanks each about 8½ feet by 8 feet in area and 12⅓ feet deep containing Nalco Chemical Company cation exchange resin called Nalcite. These units can bring the water down to zero hardness if necessary.

Wallace & Tiernan chemical feeders, controlled automatically over the full range of flow by Sparling meters, add anhydrous ammonia, chlorine and sodium silicofluoride to the water as it flows from the softeners to the storage reservoir.

Operating Features

City employees handled all electrical work and installed the station telemetering system switchgear and main control board. The master board and main control panel records and transmits all information to the city power plant and water superintendent's office, giving such information as pumps in operation, flow, water elevation in the two elevated towers, and reservoir water depth. Seven-day meters at the plant record all chemicals added to the finished water, with all metering equipment set up so that any failure will be a safe failure. Metering is done by Sparling and Bristol equipment.

Salt for the softening plant is

(Continued on page 165)

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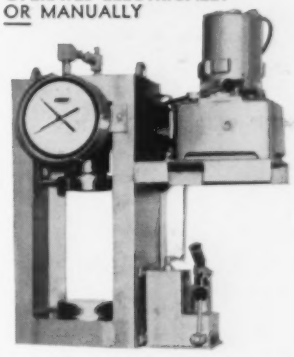
- CONFORMS TO ASTM STANDARDS
- OPERATES ELECTRICALLY OR MANUALLY



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CHICAGO 12

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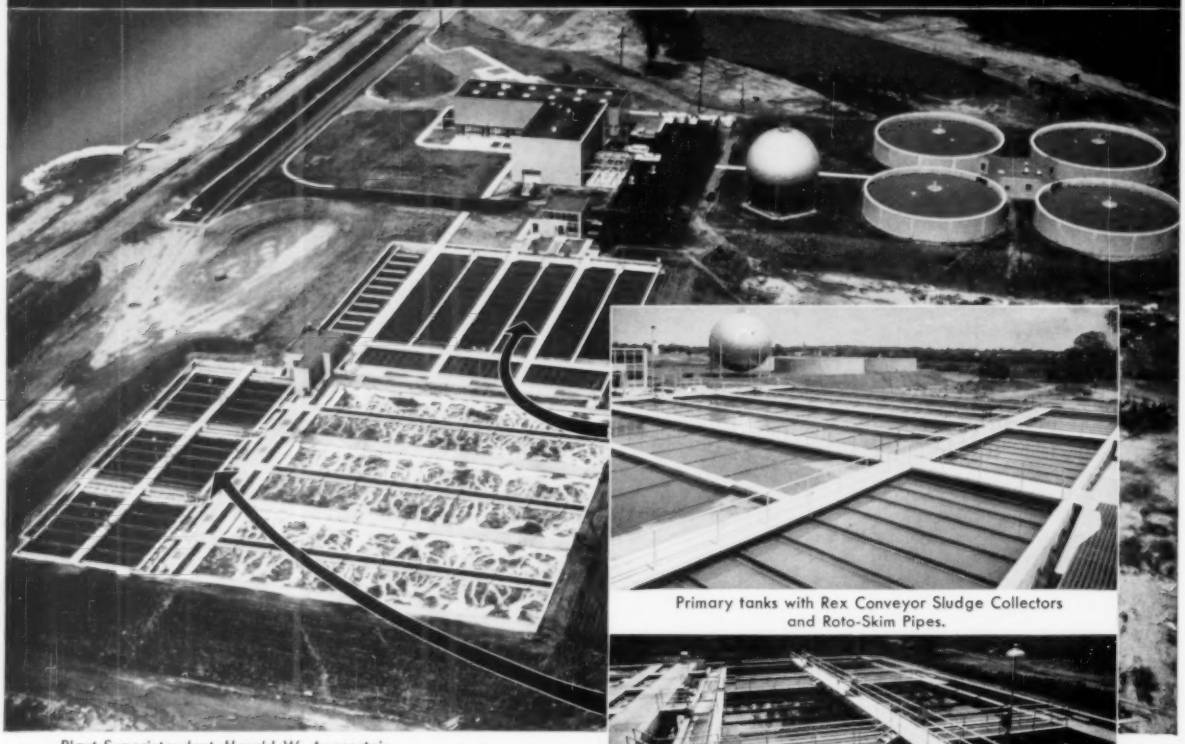
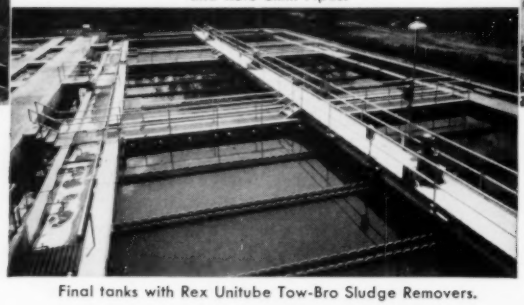
MODERN AS TOMORROW



Primary tanks with Rex Conveyor Sludge Collectors and Roto-Skim Pipes.



Final tanks with Rex Unitube Tow-Bro Sludge Removers.

Plant Superintendent: Harold W. Augenstein
Consulting Engineers: Consoer, Townsend & Associates, Chicago

HAMILTON, OHIO, PLANT

Planned For Peak Performance

The Hamilton, Ohio, new split activated sludge sewage treatment plant is a tribute to sound planning that considered not only today's but tomorrow's requirements. In anticipation of a substantial population and industrial expansion, the planning team designed a plant that would provide maximum efficiency with adequate reserve capacity for future growth of the community.

The new plant has a designed average flow of 12 m.g.d., with a maximum designed flow of 18 m.g.d. handling both municipal and industrial wastes. In the design of the Hamilton plant, maximum utilization of available area was accomplished through a compact arrangement of the treatment units by using common wall construction throughout.

The grit chambers, equipped with Rex Chain and Bucket Grit Collectors, and the rectangular primary tanks, with Rex Conveyor Sludge Collectors and Roto-Skim Pipes, are neatly grouped with the rectangular aeration tanks and the three square final tanks. Future expansion of these units with a minimum of cost is guaranteed.

In the final tanks, Rex Unitube Tow-Bro Sludge Removers assure maximum flexibility in operation ...both today and for years to come. With more positive and gentle removal of sludge, the Tow-Bro provides ample facilities for efficient operation under varied conditions.

Rex Waste Treatment Engineers are available to help design and select equipment for modern plant performance as at the Hamilton, Ohio, plant. For complete information, write CHAIN Belt Company, 4648 W. Greenfield Ave., Milwaukee 1, Wisconsin.

REX®

CHAIN BELT COMPANY

Specialized Equipment for the Effective Treatment of Water, Municipal and Industrial Wastes.

(Continued from page 163)

stored in two bins each holding one car load of salt. Trucks discharge the salt directly into the bins, which are of the lixator type. Injectors deliver the concentrated brine solution to the softeners; measuring of the brine solution is accomplished by Neptune meters.

Backwash, brining, rinse and return-to-service valves are air-controlled and hydraulically operated. All are Iowa valves, controlled and activated by a board designed and installed by General Filter Company. Hack Chemical Co. of Ames, Iowa, installed the control instruments for chemical feeding.

Prior to construction of the treatment plant, storage facilities consisted of a 204,000-gallon elevated tank erected in 1921 and a 100,000-gallon tank erected in 1945, both by the Pittsburgh-Des Moines Steel Co.

Now we also have ground storage at the plant consisting of a double reservoir of 4,000,000 gallons total capacity. The three high-service pumps, Fairbanks, Morse units rated at 400 gpm, 800 gpm and 1,200 gpm, are mounted on top of and at one end of the reservoir, with provision made for a fourth unit.

Our new plant, the first for Pella, went into service on September 19, 1959, and outside of a few minor adjustments has been in constant service. Performance has been beyond our expectations, with no noticeable variation in plant effluent within the operating flow range of 70 gpm to 1,200 gpm. Water demand has varied from a low of 360,000 gpd to a high of 950,000 gpd at the time of this writing.

The plant building cost approximately $108,000 with another $56,800 spent on mechanical equipment. Miscellaneous items added $10,000 more to the facility. The reservoir came to approximately $106,000, bringing the total cost of the project to $280,600. Financing was by revenue bonds, carrying a net interest rate of 2½% and payable in 20 years. ◄◄

Reports Required

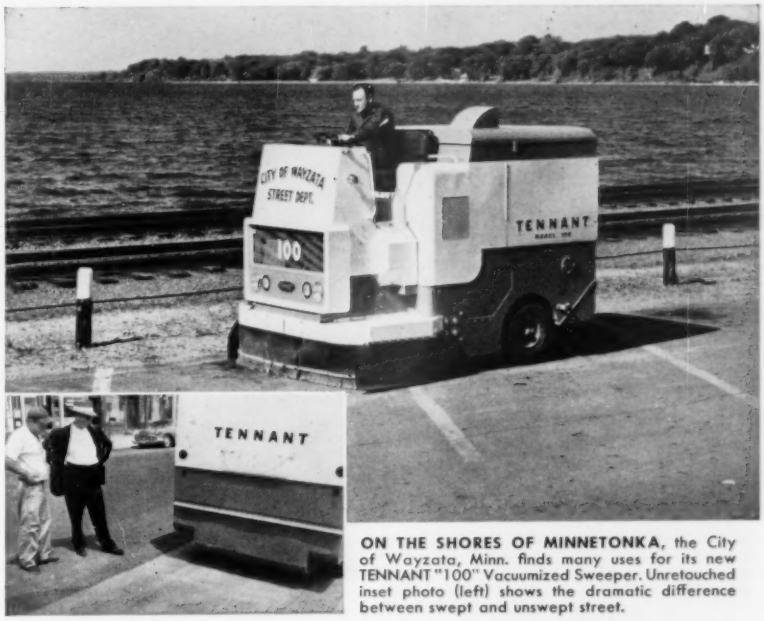
Jacksonville, Fla., requires garages or repair men to report to police headquarters any motor vehicle which shows evidence of having been involved in an accident or struck by a bullet, and to give the engine number, make and model of the vehicle, name and address of the owner or operator, license number and the nature of the damage to the vehicle. ◄◄

Overtime Parking Collected on the Spot

Instant collection of overtime parking fees on Rochester, N. Y.'s downtown parking ramps provides a convenience both for the city and for motorists. The city's system permits motorists to avoid a traffic violation by paying for overtime at a rate double the regular rate. The city itself is saved the time and paper-work of prosecuting a violation.

An attendant circulates through the eight levels of the city's ramps to check meters in violation. When he finds an expired meter, he places a ticket on the car. The ticket shows the time, the date, the car license number and the name of the ramp.

The motorist can pay for his overtime when he leaves the ramp. Otherwise he becomes a violator and receives a communication from the Police Department within ten days. In this case he must pay a regular overtime parking fine. ◄◄



ON THE SHORES OF MINNETONKA, the City of Wayzata, Minn. finds many uses for its new TENNANT "100" Vacuumized Sweeper. Unretouched inset photo (left) shows the dramatic difference between swept and unswept street.

How to sweep your city clean as a clear-water lake

...without using a single drop of water!

Yes, it's true! Water-free, dust-free sweeping is now possible any time of the year . . . with the new TENNANT Model 100 *Vacuumized** Sweeper!

Powerful-broom-and vacuum system instantly picks up *fine dust and dirt* . . . as well as heavy, bulky debris. Cleans a 7′ 4″ path. Gets the dirt that conventional sweeping methods miss.

New type main broom adjusts to constant diameter. Assures uniform sweeping results during *entire* life of broom. You'll *see* the difference!

Huge 540 sq. ft. filter gives almost perfect dust control . . . in a class by itself. No need for a water spray . . . no winter freeze-up.

Trimly compact, highly maneuverable. Assures wide-range use with outstanding results in downtown areas, parking lots, dusty alleys . . . as well as in attractive residential areas.

WRITE TODAY *for illustrated bulletin to* G. H. Tennant Co. 751G N. Lilac Drive, Minneapolis 22, Minnesota.

OUR 90th YEAR
TENNANT

VACUUMIZED* SWEEPERS

*Vacuumized sweeping was introduced by Tennant in 1947

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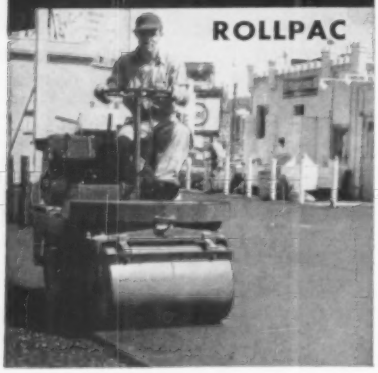
STATIC OR VIBRATORY



Whether your job is . . .
Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.
That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

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To Check Purchasing Performance

By A. C. SHEPHERD
City Purchasing Agent
Winston-Salem, N. C.

There are a number of ways to indicate what a purchasing department is doing and whether it is going forward or backward. Four helpful steps are:

1. Define the limits of the purchasing job.
2. Determine the desired objectives to be achieved.
3. Develop a program.
4. Compare progress with the objectives.

Analyze Duties

The budget should be checked periodically. Keep a record of quality and delivery performance. Make a record each time something is received of inferior quality. Auditors usually make suggestions after checking purchasing department records. They can see where you are short on some methods and long on others. If the auditors' suggestions appear to be good, follow them and see if they improve purchasing performance.

The annual report should show: number of orders issued this year compared with last; dollar volume purchased with previous year's comparison.

Much has been said about cost per order in measuring purchasing performance. Cost per order is a minor consideration and merely a part of the overall picture. For instance, cost per order might be $10 or $3.38. It will not mean anything to management. As an example, suppose your number of orders drops from 100 per week to 80 per week. Your internal cost is going to be the same. You are not going to eliminate anyone from the purchasing department payroll.

A. C. Shepherd

When an order is issued, it touches off a great chain of events. Your purchasing department, accounting division, accounts payable, treasury department, and others are affected each time a purchase order is issued. What about these costs when you analyze cost per order? They are not reflected at all.

To concentrate on cost per order as a guide in evaluating a purchasing department tends to reduce the purchasing function to a bookkeeping, not a profit-making, approach to purchasing. Cost per order is a clerical measurement of activities and not of ideas.

Other Measures of Performance

Check the number of requisitions processed, the number of purchase orders issued and discounts earned. Tabulate them regularly to study for increase and decrease. Here you can show definite purchasing performance; whether good or bad is up to you.

Study the number of requisitions received against orders issued. It may be that you received 200 requisitions in one month and issued 190 orders. This may indicate you are consolidating requisitions, which might show wise buying. It might also indicate that you can consolidate more requisitions. When items are consolidated and quantities increased they are usually purchased at lower prices.

Analyze your orders in their different dollar categories. Take six months' or one year's purchase orders and tabulate the number issued in amounts from 1 cent to $5; then the number from $5.01 to $10; then those from $10.01 to $15, and so on. I am sure after studying these figures you will arrive at some method of eliminating or consolidating certain types of orders.

When you start into a quality performance program, give the fol-

lowing items careful consideration:

Do I get fair prices?
Do I shop around enough?
Do I have a good standards program?
Do I seek new products?
Do I get around to see my purchase being used? (Here we fail too often. It is easy to issue a purchase order for an item and not know how it is going to be used.)
Do I maintain adequate records?
Do I read trade journals?
Do I review fulfillment of delivery promises and general reliability of suppliers?
Do I have sound inspection procedures? ◄◄

This article is taken from a talk given before the Carolinas Association of Governmental Purchasing at the University of North Carolina and reprinted in *Municipal South* and the *Alabama Municipal Journal*.

Best in Its Class—Third in the Nation

IAFC's members at the 87th annual conference of the International Association of Fire Chiefs in Rochester, N. Y., September 12th-15th, will see one of the best equipped fire-fighting forces in the nation's Fire Service. It consists of 20 pumping engine companies, 11 trucks, and one salvage company. It also has 14 reserve pumpers and two reserve trucks.

In addition there are a fire academy, 24 fire houses (most of them new), a communications center, and repair shops where two new pumpers a year are built. A new aerial ladder truck is purchased every other year.

The Fire Bureau's budget last year was $3,321,476 and its personnel of 630 drew salaries amounting to $3,123,526.

The Bureau's beginning goes back to a winter afternoon 140 years ago, when fire broke out in a building housing the *Gazette*, the city's first newspaper. The "bucket brigade" toiled in vain but a volunteer department came into being seven years later. Here are some historical highlights:

Paid Fire Department was organized 1862.
Gamewell Fire Alarm System installed, 1869.
Holley Water System installed, 1874.
Fire Department reorganized, 1877.
First ladder equipment in service, 1894. ◄◄

The New 1960 Asplundh Chippers Are Best for Municipalities

Asplundh Chippers are rugged, absolutely safe, are engineered for continuous, trouble-free service. They chip faster than any other chipper in the world; are easily maintained, simple in design, require less labor and materials cost.

New 1960 features include:

- **new wedge locking bar assembly** for simpler, faster blade maintenance
- **replaceable floor plate,** eliminates need for housing disassembly
- **larger diameter cylinder journals** for a stronger chipping unit
- **removable cutter bar assembly** to facilitate service
- **optional blower unit** to preclude chute stoppage when chipping large volume of dense or wet foliage

DECIDE WITH THE FACTS . . . write for complete information . . . ask for names of users near you. Best of all, ask for a DEMONSTRATION WITHOUT OBLIGATION. What could be more conclusive?

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- **Proven Lowest First Cost**—Rambler offers America's lowest-priced cars.
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- **Proven Highest Resale Value**—Both leading national used car services—N.A.D.A. Used Car Guide and Red Book Market Reports—show Rambler has the top resale value of all low-priced cars.
- **Proven Stronger Single-Unit* Construction**—More than twenty years' experience enables Rambler to build the strongest, safest all-welded Single-Unit construction. Only Rambler offers *complete* unitized construction on all models.

*Pioneered by American Motors

For Complete Information On How **RAMBLER** *Can Cut Your Fleet Costs . . .*

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FLEET SALES DEPARTMENT
Dept. A-6
AMERICAN MOTORS CORP.
14250 Plymouth Road, Detroit 32, Michigan

This is the new railroad crossing which has sparked a long-term planning program which is paying dividends to Maple Shade, N. J.

A Railroad Crossing Made Us Start Planning

. . . and proved the value of considering over-all community growth rather than individual unrelated projects

By GEORGE W. DOLBY
Township Committeeman
Maple Shade, N. J.

Everybody knew we were growing—not because of our efforts, but rather, in spite of ourselves. In nine years, our population of 6,560 had doubled. We are just nine miles east of the center of Philadephia and are crossed by two major highway routes which lead to the primary employment centers of Philadelphia and Camden. People like living in Maple Shade because it is convenient. This is an advantage that is not of our making.

Like many other communities in similar conditions, we tried to plan. We first turned to land-use and development controls, passing a subdivision ordinance in 1954; and a zoning ordinance two years later. However, as more people moved into the township, we became increasingly aware that problems were arising which could not be solved by passing regulatory devices alone.

For example, our business district was getting more crowded each day. Residential growth in the north section apparently contributed to this problem since access to that area required passing through the center of the business district to reach the most convenient railroad crossing. The railroad cuts across the narrower portion of the town like a belt, blocking much of the population from the business district. While two other railroad crossings existed, they could not satisfy the need, since by their very location they were too far removed to provide convenient access, particularly for traffic coming from Camden and, in part, from Philadelphia.

In addition we recognized the undesirable situation that the congested crossing created by blocking access of important emergency vehicles.

To determine how to correct these, we conducted studies with the assistance of the Government Consulting Service of the Fels Institute of Local and State Government, University of Pennsylvania. The investigations included:

- **Land use**
- **Pattern of new development**
- **Distribution of community facilities**
- **Traffic volumes at existing rail crossings**
- **Frequency and volume of rail service**

The results indicated the need to provide a grade crossing west of the business district that would eliminate our almost complete dependence on a single railroad crossing. Although a grade separation would have been more desirable, physical conditions made this absolutely impossible.

The planning approach enabled us to present a complete analysis of the facts to support our case for the need of the crossing before the State Public Utilities Commission. The Commission subsequently ruled in favor of our request and the crossing was completed in August, 1959.

On the surface, it may seem that the recommendations and the decision violate the general principle of eliminating railroad grade crossings. More thorough analysis, however, shows that the decision advanced the welfare and well-being of the community, particularly since no other alternative was available.

As the result of our work and experience with this problem, we in Maple Shade began to realize that many interrelated factors are involved in the treatment of any one development problem. We recognized that we cannnot treat our traffic and street problems in isolation, but have to develop a plan for

(Continued on page 172)

"'K&M' ASBESTOS-CEMENT

LAYS AS FAST AS

Assembling 16" "K&M" Asbestos-Cement Pressure Pipe by hand without the aid of a bar. The backhoe merely steadies and aligns the pipe. The easy, two-step operation consists of (1) lubricating the tapered end of the pipe, and (2) sliding pipe into coupling.

PRESSURE PIPE

A SHOVEL DIGS..."

G&B Construction, Inc., Youngstown, Ohio, installs 4½ miles of "K&M" Asbestos-Cement Pressure Pipe for the Austintown District of Mahoning County, Ohio

"You can lay 'K&M' Pipe as fast as a shovel can dig. There is nothing that will hold you back with this pipe. When you can lay a 16" water line, and it goes in as easy as an 8" water line, what more could you ask? They've got a good joint with that FLUID-TITE® Coupling . . . the pipe is wonderful to put together. There is no comparison between the FLUID-TITE Coupling and other couplings. Of all the 'K&M' Pipe we've laid, we never had a coupling break. Coupling breaks are very common with other pipe."

Those are the comments of Louis Gulfo, partner with Mike and James Bertilacci in G&B Construction, Inc. They installed "K&M" Asbestos-Cement Pressure Pipe in bitter cold, during February and March 1960. However, neither rain, snow, nor mud interrupts the installation of this modern pipe. The exclusive, patented "K&M" FLUID-TITE Coupling and the simple fitting procedures required make assembly easy.

Little or no maintenance will face Mahoning County, which built and will operate the system for a year, or the City of Youngstown, Ohio, which will then take it over. Being non-metallic, "K&M" Asbestos-Cement Pressure Pipe won't rot, corrode, or tuberculate, and is immune to electrolysis. The suppliers of this pipe were Trumbull Plumbing Supply Co., Warren and Youngstown, Ohio.

Now, in addition, you may use quality "K&M" Plastic Pressure Pipe in the same system with "K&M" Asbestos-Cement Pipe, if desired.

Write today for more information on "K&M" Asbestos-Cement Pressure Pipe to: Keasbey & Mattison Company, Ambler, Penna. Dept. P-560.

K·M BEST IN ASBESTOS

Keasbey & Mattison at Ambler

Left to right: Louis Gulfo, G&B Construction, Inc.; Dale MacCleary, sales manager, Trumbull Plumbing Supply Co.; James Bertilacci, G&B Construction, Inc., Burke Lyden, Asst. Chief Engineer, Youngstown, Water Dept., Jim Bisciglia, Asst. Engineer, Mahoning County, and J. Henry Painter, Trumbull Supply Company.

3 miles of 16" "K&M" Asbestos-Cement Pressure Pipe were installed. Here, we see it ready for installation along Webb Road, in Austintown Township. In branching from the 16" water line, Mahoning County used 1 mile of 12" "K&M" Asbestos-Cement Pressure Pipe and ½ mile of 8" "K&M" Asbestos-Cement Pressure Pipe. Specifications call for 90 lbs. pressure when line is in operation serving 16,000 residents.

(Continued from page 169)

their use, and improve the township's entire street system in relation to overall development. Moreover, we cannot limit this thinking to streets alone, but must recognize planning in relation to future land use: recreation, and other community facility needs; industrial development, etc.

With federal and state financial aid, our Planning Board undertook the preparation of a Master Plan of Development in 1957. Here again we drew on the technical assistance of the University of Pennsylvania's Government Consulting Service.

As a result, our street planning has become integrated. We have gone beyond the limited piecemeal approach which was made urgent by the railroad crossing problem, and, by dealing with the total problem of traffic circulation, have been able to devise proposals for street extensions, by-passes, intersection improvements, and street closings and widenings throughout the township. We also have applied this comprehensive approach to the needs of the entire township and not only to specific locations.

The planning approach has come to make sense to us. Our Master Plan, adopted in November 1959, is playing an important role in the decisions we are making relative to the growth and form of Maple Shade. We intend to have our Planning Board continue to make its contribution to the growth and development of the township. ◄

Regional Planning Booms in Ohio

Since 1950, urban planning in Ohio has leaped out of the city and into the countryside, following people. At the beginning of 1950, there were only two regional and three county planning commissions making use of the 1923 enabling law. Now, there are 11 regional commissions (serving 13 counties) and eight county commissions, all with full-time staffs. About 15 more counties are now talking of organizing commissions.

Rural zoning, still new to Ohio in 1950, is now in effect in more than 300 townships.

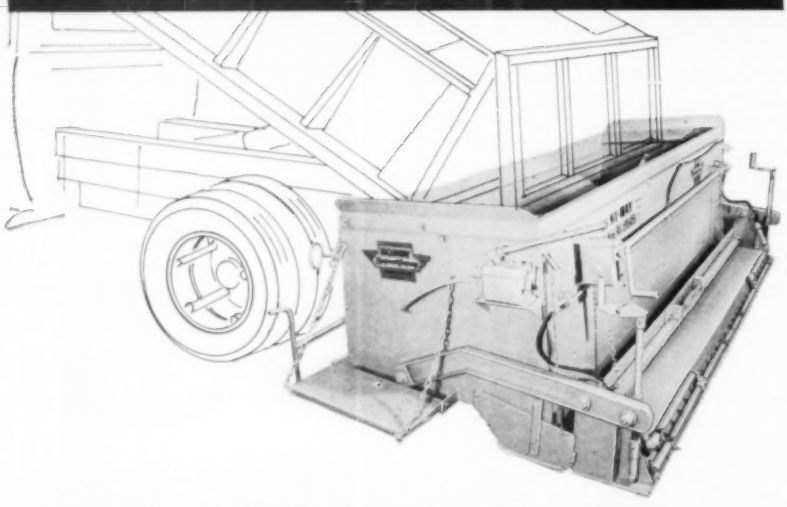
The planning tempo speeded up in the cities too. Cleveland published its comprehensive plan in 1950 and a downtown plan in 1959. These two interests headed the planning agenda in other Ohio cities, also.

The most spectacular progress that always must follow good planning came in slum clearance, starting the decade as urban redevelopment and ending it as urban renewal. In 1950, cities were puzzling over the new federal and state redevelopment laws. In 1959, there were ten projects in the execution stage in seven Ohio cities.

These ten projects are clearing 814 acres at a net cost of $57.9 million and are removing 6,843 substandard and 1,527 standard dwellings. The value of cleared and improved land for new uses will be $16.5 million. New uses will include about 8,500 dwellings, 154 acres of commercial and industrial development, 54 acres of public uses, and 200 acres of streets.

The Ohio Planning Conference, over 30 years old in 1950, was then just hanging on to life with only 36 members. It now has more than 540. The American Institute of Planners had 48 Ohio members in 1951 (5.3% of the national members) and now has 98 (4.2% of the national members). ◄◄

HI-WAY Model AS Bituminous Paver



A Jack of All Trades, Tow-Type Paver...
a Running Mate for your Self-Propelled Equipment

A fast worker on driveways—parking lots—playgrounds—airports—streets, roads and highways—and on any job you can drive a truck through. A paver small contractors and townships alike, can easily afford. Adjustable full floating screed permits concave surfaces up to 1½" crown. An optional heated screed permits paving with hot or cold mixes. Hydraulically operated spring-loaded shutoff gate eliminates emptying at end of the run. Can also be used to spread aggregates.

Other Model AS Features

- *Screed raised, lowered or locked in road-traveling position by hand crank*
- *Available in 8, 9 and 10' widths with capacities up to 1⅓ cu. yd.*
- *10 gauge, reinforced hopper with smooth sloping sides*
- *Folding type operator's platform on each side of paver*

Write for the latest literature and complete specifications.

HIGHWAY EQUIPMENT COMPANY

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Considerations in Designing A Small City Park

By MAX W. MATZ*
Landscape Designer
Chicago Park District

There are many types of city parks ranging from the tot lot to the neighborhood park, to the community and regional park.

The neighborhood park or the combination of the school-park, or school-park and housing agencies, usually ranges from five to 10 and 20 acres in size and serves a population within one-half to one mile.

It is much more difficult to design a small park than a larger one. In the former you are confined to a limited space and limited facilities. Therefore, the shape of the land is very important. Angled shapes, steep grades, deep excavations, old quarries, bog, etc., usually are costly to develop. The site selection has a direct bearing on cost of development. In park design, the following points should be considered.

1. *The open space.* Here is located the athletic area. In this area we have multiple use of recreational facilities, such as baseball, junior baseball, softball, football, soccer, and special gatherings.

2. *Location of the fieldhouse or community building.* This building in the neighborhood or community park can be a large community house or a small junior fieldhouse. The building must be located to serve all areas for supervised play so that they can be checked from the supervisor's office. It must have easy access from the street.

3. *Park walks.* Where possible have walks tie the design together. In inclement weather they are especially necessary and are needed for people who like to stroll or push a baby carriage. The park walk should be inviting and relaxing as well as utilitarian and should be designed so as not to divide the area, reducing its usefulness.

4. *Multiple-use play area.* This is another contemporary conception of recreation facilities that is practical and economical. Its size is usually 140 x 74 feet and it is used for basketball, volleyball and other similar activities. It is preferably constructed of concrete, for durability and hard surface, although it is more costly than asphalt.

5. *The children's playground.* In order to capture the imagination of the child, all types of abstract sculptural equipment are being used in conjunction with standard equipment such as swings, slides, teeters, etc. Many existing playgrounds appear drab and not too exciting for the child's imagination. The designer, in restudying the playground problem, strives to capture interest by using free-form design, sculptural facilities and color through flowers and paint. He must also bear in mind minimum maintenance. Some designers use the fairyland motif while others use the old standard equipment with the addition of the milk wagon, fire truck or locomotive.

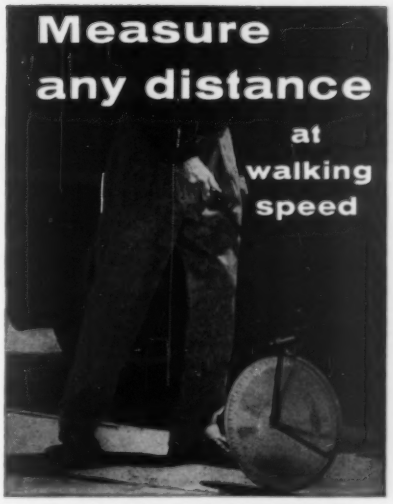
6. *Surfaces.* The hard usage that playgrounds get quickly destroys the surfaces. Therefore good surfaces are a constant need. Some park districts use paved areas such as concrete, asphalt and limestone, while others are experimenting with corn cobs, tan bark and rubber pellets.

In the Chicago Park District we experiment with different types of equipment such as sculptured turtles, walls to walk on, and various climbing structures. In general, we

(Continued on page 175)

* Mr. Matz has been a landscape designer for the Chicago Park District since 1935. His responsibilities include designs varying from small tot lots to 800-acre parks.

Measure any distance at walking speed



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Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

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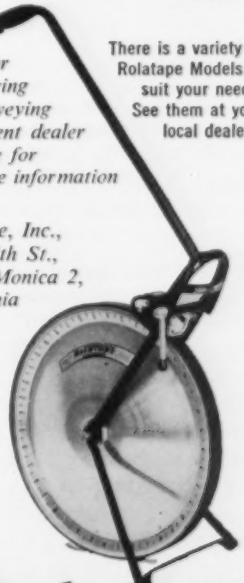
See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.



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Measuring Wheels

NOW HE'S REALLY HAD IT!

Economical malathion-Lethane combination gives
30% better kills than presently-used insecticides
...controls resistant strains, too

60% kill of mosquitoes in area control work is no longer good enough. 90% *plus* is what you can expect with a malathion-Lethane combination. The cost? Comparable to presently-used but *far less effective insecticides.*

Controls larvae and adults

Malathion plus Lethane gives spectacular results on both life stages. While recommended rates are generally higher, 1/10 lb. per acre has given excellent control of adult mosquitoes in Florida. Hundreds of thousands of acres are being treated yearly for larvae in California at ½ lb. per acre with similar results.

Controls resistant strains

While malathion is replacing less effective insecticides in all areas, it is particularly useful in the many areas where mosquitoes have become resistant to chlorinated insecticides. Here, authorities have switched almost exclusively to malathion because it is *the* phosphate with low toxicity to warm-blooded animals. The U.S. Public Health Service reports that malathion is actually less toxic than DDT. Vector control authorities, park and city managements are specifying malathion for its combination of mosquito-killing power and safety in use. It can be applied by air, thermal fogging and mist spraying with equally good results.

Write to American Cyanamid Company, maker of technical malathion, for detailed information on area mosquito control.

Formulations widely available

Malathion formulations are supplied to area control authorities by many well-known manufacturers under their own brand names. American Cyanamid Company, Agricultural Division, New York 20, New York.

CYANAMID

MALATHION
INSECTICIDES

(Continued from page 173)

have been using mostly our standard equipment. We have so many playgrounds that we must go slowly and be sure. Surfaces are a very serious problem; so in very tight situations, as in the tot-lot playground, we try a practical approach. We are using free-form walks of asphalt, colored seal of Laykold asphalt, or concrete, that lead around the park to the benches. We are also experimenting with crushed limestone in a free-form shape. Our landscaping is kept to a minimum, with shade trees, flowering crabs and some lawn. In this way we eliminate considerable maintenance, yet provide the tot lot with landscape setting. Flowers are desirable and add interest. However, flowers should be selected that require minimum maintenance.

Here are items to consider:

a) Eliminate shrubs in general, except for ornamental specimens around the building; use small trees like thorns and crabapple, throughout the park.

b) Eliminate planting of any trees less than three inches in diameter. The public has more respect for the larger tree. Use low-growing shrubs.

c) Use trees requiring minimum maintenance. Usually native trees are the hardiest and require little protection. They should be compatible with the environment, soil, exposure and drainage.

d) Plant trees not less than 15 feet apart so that the grass between the trees may be mowed with mechanized equipment.

e) Do not plant trees or shrubs too close to tennis courts. The plants cut off air circulation and are paper catchers.

f) It is desirable to eliminate poplars, soft maples and willows.

g) Try to eliminate planting over water lines, sewers, electric conduits or planting under over-head wires. If it is necessary to plant over or under these utilities use small trees with small root systems.

h) Do not plant close to light poles; this means costly maintenance.

i) Eliminate fences, except where safety is involved. Fence painting is often a problem.

If we are aware of park development problems we can avoid many mistakes, and judge plans intelligently. If you do not have a trained landscape architect on your staff, you should have one as a consultant. Select a good consultant with experience and one who will provide ample supervision. ◄

Driver Training Instead of Traffic Fines

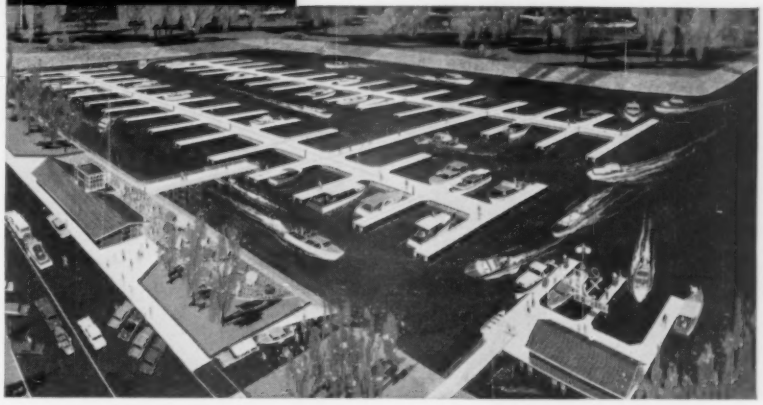
Instead of pronouncing immediate sentence, judges hearing traffic cases in Rochester, N. Y., may allow violators to choose attendance at a driver-improvement course. Drivers who choose the course receive an adjourned date in court.

The improvement course meets in three consecutive weekly sessions, each two hours long. The drivers hear a 50-minute lecture with a question-and-answer period and receive different psycho-physical tests dealing with reaction time and vision, take a written test of 20 questions, and see a half-hour traffic-safety film.

At the conclusion of the course a record of each student is forwarded to the judge. When the violator reappears, and if his rating and attendance at the course are satisfactory, the judge usually suspends sentence.

Most violations are for exceeding speed limits. ◄◄

MODERN MARINAS by Standard Steel



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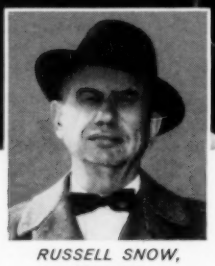
ADDRESS.....

CITY..... ZONE.... STATE.....

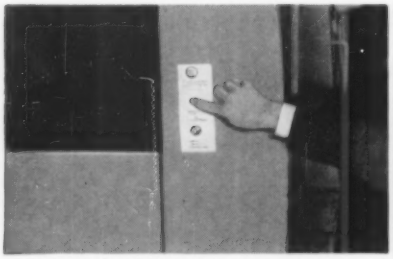
One man, in one day, makes 540 collections!



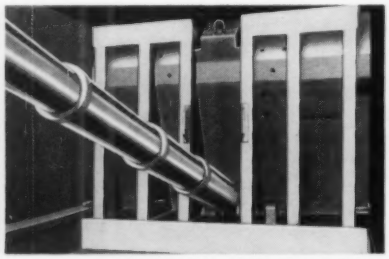
RUSSELL SNOW, Manager, Refuse Service, Inc.

"Our Hydro E-Z Packs fit perfectly into our profit operation."—

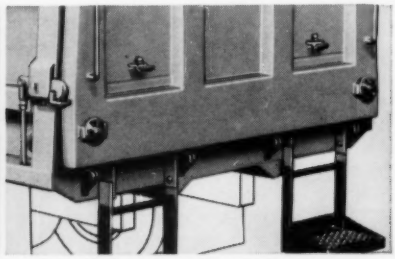
In Battle Creek, Mich., one man with a Hydro E-Z Pack makes 540 residential collections a day for Refuse Service, Inc., with only one trip to the landfill. This most powerful of all refuse compactors applies a 76,600 lb. squeeze to reduce garbage and all refuse to a compact bale. At the landfill the compactor blade pushes the load out through the endgate in less than 90 seconds. No hoisting or weighting needed! You can see why Russell Snow, Manager, says, "Our E-Z Packs fit perfectly into our profit operation." Now write us. We'll help arrange a demonstration and send you a free copy of an informative book, "The Big Squeeze."



Automatic cycling—simple push button control of packer blade makes one-man operation easier, faster than ever.



Reinforced blade moves on two enclosed tracks on sides. 84" bearing area prevents twisting, eliminates drag.



Watertight and sanitary! Six strong latches (with level release) hold one-piece door in contact with seal.

Hydro E-Z PACK

HYDRO E-Z PACK®

HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO, U.S.A.

601

© 1960 HOWARD SWINE

Austin's New Fire Chief Reports a Busy Year

The insured fire loss in the City of Austin, Tex., in 1959 amounted to $595,397 or $51,000 more than in 1958. In addition to this property loss there was one fire death.

Activities of the past year included response to 477 regular alarms, 1,957 still alarms and three multiple alarms. Of the total, 31% were A. M. alarms and 69% were P. M. alarms. Out-of-city alarms numbered 86.

The fighting was performed with twelve Seagrave 750-gpm pumping engines, five Pirsch-GMC 750-gpm pumping engines, three 65-foot, a 75-foot and a 100-foot aerial ladder, and five booster trucks.

The most recent apparatus is a Chevrolet booster purchased in 1959, a 65-foot 1957 Pirsch aerial ladder, and four Pirsch 750-gpm pumping engines purchased in 1957.

Equipment purchases made in 1959 also included a Fyr-Fyter Penetrator siren and public address system and $1,000 worth of fire fighting clothing.

The department's work week was reduced from 63 hours to 60 hours by adding a third shift. During the last five years the number of firemen rose from 209 in 1953 to 252 in 1959. The number of firemen per 1000 population was 1.21 in 1955 and 1.26 in 1959.

Of 64 emergency alarms, half were handled by resuscitator and six required a boat. Of all fires, 54% were extinguished by booster lines; 16% by pump cans, and 20% were out on arrival of the Department.

Locality Education

Education in firemanship is continuous in the Austin Fire Department which supplies each member with local material that is not available in fire service publications. By "local material" is meant those things that the average fireman should know about his own city or community which will affect his efficiency as a member of the local fire department. Knowing that CO_2 is a suitable extinguisher for electrical fires is of little value if a fire company is unable to locate the address at which the fire has occurred; knowledge of street layout is essential. Similarly, regardless of how learned in hydraulics the fireman may be, it is all for naught unless he can locate a fire hydrant. The preparation of the "local material" is no overnight task but is expensive and time consuming. This is why promotional examinations (civil service, etc.) do not have a substantial number of "local questions."

The Austin Fire Department makes available to each of its members various mimeographed material, almost entirely local in nature, as follows:

Streets and Hydrants—**lists each "named" street and its hydrants.**

Buildings—**lists correct address of buildings under sub-headings of state, city, county, federal, hospitals, nurses' homes, private schools, museums, airports, theaters, hotels, housing projects, lumber companies, rest homes, recreation centers, and playgrounds, wading and swimming pools.**

Apparatus and Equipment—**briefly describes each apparatus (make, model, pump capacity) and the equipment carried on the apparatus.**

Sprinkler Systems—**lists the name and address of buildings with sprinkler system as well as type of system (wet, dry), location of intake, if any, and cut-offs.**

House Lines—**lists the name and address of buildings with house lines, size of outlet, size of hose attached, and location of intake, if any.**

Company Territories—**describes the area of the city in which each company will respond to a regular alarm. The dispatcher merely announces the address of the alarm. Company personnel are required to have detailed knowledge of street, hydrants, buildings, etc. in their territory.**

Our philosophy of firemanship training is that an efficient firefighter must know local conditions.

R. H. DICKERSON
Chief of Fire Department

Night Accidents

A survey of large cities by the Institute of Traffic Engineers indicated that adequate street lighting cuts night traffic accidents from 15 to 25%. At Flint, Mich., before and after studies of relighting showed after-dark accidents reduced 50%.

NCG® wherever emergency strikes...

*Handy** Resuscitators automatically breathe when the breath of life is gone.

The Handy Resuscitator does *three* important things:

1. It automatically inhales and exhales, adjusting automatically the depth of respiration to the patient's lung capacity, for an adult, child or even *infant.*
2. It can be quickly switched to "Inhalation" to supply oxygen to be absorbed by the spontaneous respiration of the patient.
3. It provides sufficient suction as an Aspirator to remove obstructing material from the throat, such as water, mucus, etc.

GIFT FOR LIFE

Various organizations have presented Handy Resuscitators to local Fire and Police Departments and Civilian Defense Groups. Why not ROTARY, ELKS, LIONS, MOOSE, KIWANIS or Veteran Organizations in your area?

Get complete information today. Phone or write now.

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DIVISION OF CHEMETRON CORPORATION
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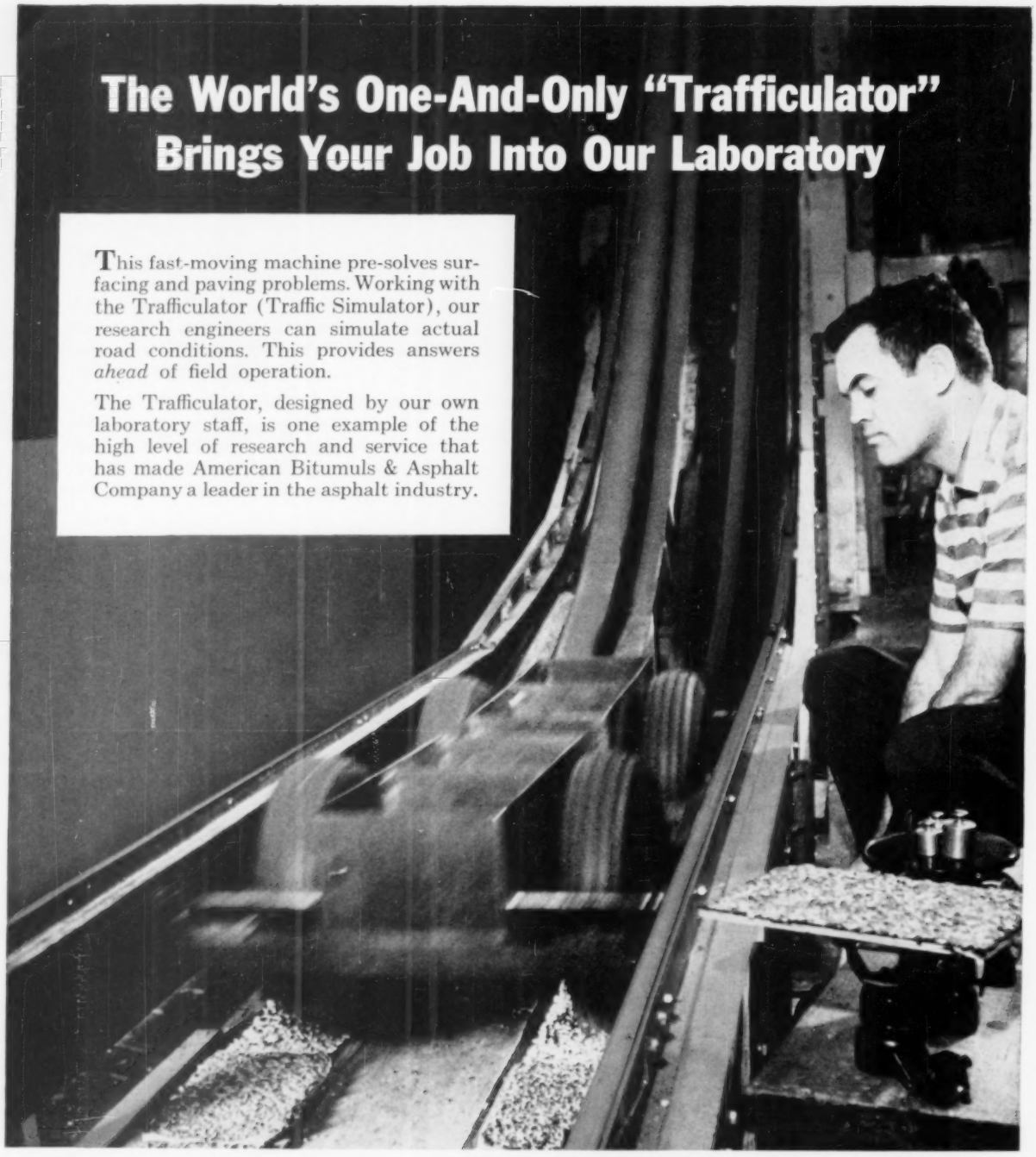
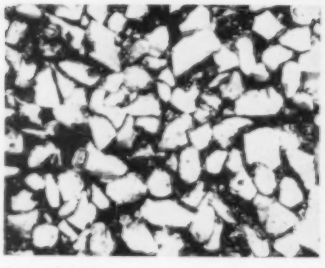
The World's One-And-Only "Trafficulator" Brings Your Job Into Our Laboratory

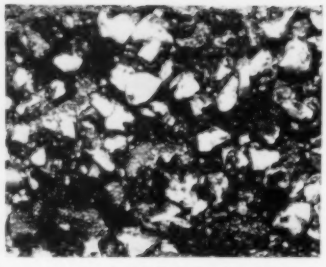
This fast-moving machine pre-solves surfacing and paving problems. Working with the Trafficulator (Traffic Simulator), our research engineers can simulate actual road conditions. This provides answers *ahead* of field operation.

The Trafficulator, designed by our own laboratory staff, is one example of the high level of research and service that has made American Bitumuls & Asphalt Company a leader in the asphalt industry.



Trafficulator Tests Prove Cationic Bitumuls Reduces Loss of Siliceous Cover Stone





After 1,000 passes by the Trafficulator, cover stone retention on the Cationic panel (left) is 70% better (by weight) than on the panel prepared with regular grade emulsion.

American Bitumuls & Asphalt Company
320 Market St., San Francisco 20, Calif.

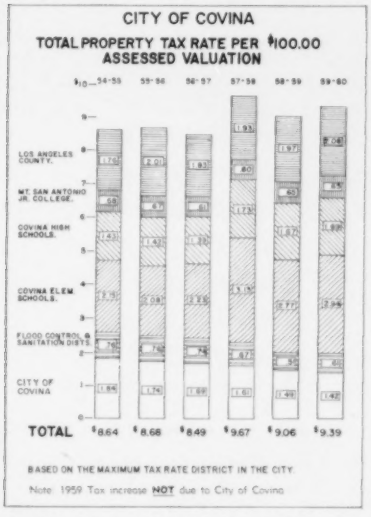
Perth Amboy, N. J.	Atlanta 8, Ga.	Portland 8, Ore.
Baltimore 3, Md.	Mobile, Ala.	Oakland 1, Calif.
Cincinnati 38, Ohio	St. Louis 17, Mo.	Inglewood, Calif.
	Tucson, Ariz.	San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts
LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

Tax Rise Antidote

Recently the Board of Supervisors of Los Angeles County raised the tax rate 11¢. The City of Covina sidestepped citizen anger by a smart bit of public relations.

In order to offset the possibility of a tax "revolution" similar to the one that developed in 1957, the city mailed a copy of a tax rate breakdown at the same time that the



Covina shows by this bar chart that, while overall taxes have risen, the city's portion has actually dropped.

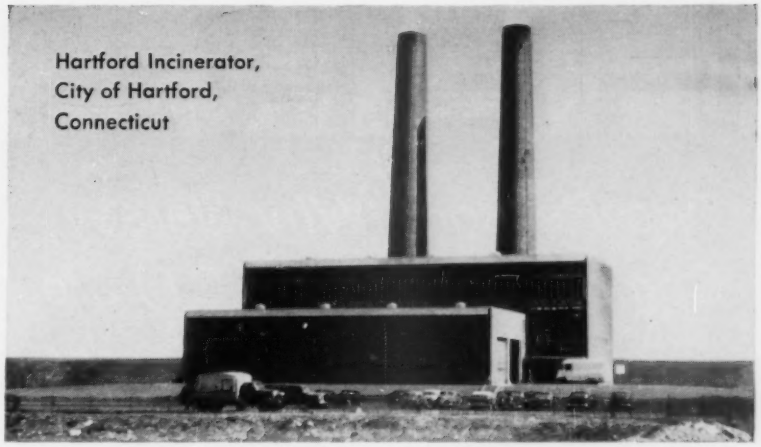
county delivered the tax bills. The chart showed clearly that the tax hike was caused by the schools and the county, not by Covina.

This was a prudent move. City Administrator Neil Goedhard reports that in contrast to the rest of the San Gabriel Valley communities, Covina has received little or no criticism. ◄◄

New Pavilion Pays off Quickly

Asbury Park, N. J., is set to start earning dividends on its new Third Avenue Pavilion almost before it has been completed. The new beachfront facility, scheduled to be completed by July 1st, will contain stores, hot salt-water baths, and a sun deck covering an area of 16,000 square feet, as well as public rest rooms. Cost of the structure, including architectural fees, will be $325,000. Leases on the stores already approved will exceed $475,000 for the ten-year lease period.

This is the second such new structure that Asbury Park has erected in less than two years. ◄


Hartford Incinerator,
City of Hartford,
Connecticut

Modern Hartford disposal plant uses FITCHBURG CHIPPER

Hartford's new municipal incinerator is used to dispose of more than 400,000 pounds of waste every day. The large picture above shows this efficient, attractive plant—one of the most modern in the nation.

An important part of Hartford's up-to-date disposal program is their portable Fitchburg Chipper, which cleans up disposal jobs the incinerator cannot handle, and goes out on location for road use.

Hartford had these problems:

• *Banana Stalk Disposal* • *Brush Disposal on New Roads*
• *Christmas Tree Disposal* • *Road Clearance from Storm Damage*

How a Fitchburg Chipper solves these problems:

Joseph J. Coffey, Superintendent of the Hartford Incinerator, tells you in his own words how Hartford solves these problems: BANANA STALKS: "We chip 2 to 4 tons of banana stalks each week. These stalks will not burn regardless of heat in the furnaces, and we had to dump them until the Fitchburg Chipper went on duty." CHRISTMAS TREES: "During the post-Christmas season we receive many Christmas trees which we can now get rid of without the trouble of watching for burnt-down spike-like stubs which cause much trouble with the incinerator equipment."

BRUSH DISPOSAL: "Our Highway Division has used our Fitchburg Chipper to clean up the brush and branches along newly developed road areas. By chipping brush, the city saves in use of both manpower and trucking costs." ROAD CLEARANCE: "If we get hit again by hurricanes or bad wind storms, we now have an excellent piece of equipment that will enable us to readily open up the streets for emergency traffic by reducing the fallen branches to chips."

As to maintenance, Mr. Coffey says: "Our Fitchburg Chipper will pay for itself in a very short time. Maintenance, so far, is just keeping it supplied with gasoline and fully lubricated. It is easy to handle, easy to store, and very easy to use."

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FITCHBURG ENGINEERING CORPORATION

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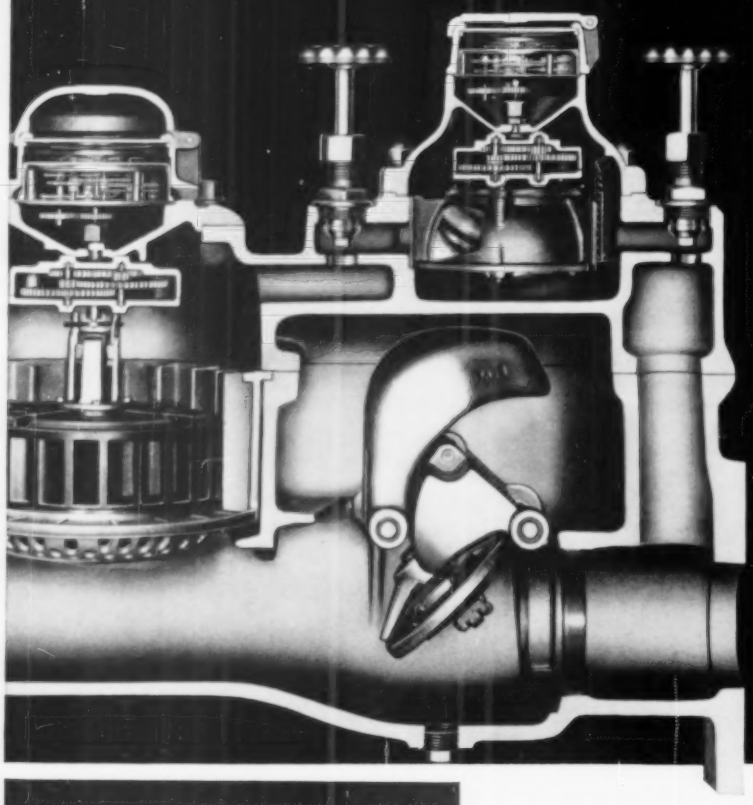

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Valves make it possible to shut off the by pass meter without closing the main line meter— an exclusive feature.

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The counter-balanced lever valve causes a decrease in pressure loss at rates of flow above 10% of maximum— an exclusive feature.

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

The Law of Laundromats, Again

PENNSYLVANIA. *Van Sciver* v. *Zoning Board of Adjustment of Philadelphia*, 152 Atlantic (2d) 717 (Supreme (highest) Court, July 2, 1959).

The A commercial district regulations in Philadelphia permitted a "hand laundry or agency," and also (with a certificate from the Board of Adjustment) other uses "of the same general character" as the enumerated uses. The General Industrial District regulations permitted a "Laundry (steam)." In an application to install a laundromat in such a district, the Board held that the proposed use was not permitted as of right; but a variance was granted for such an establishment, with conditions attached to the variance—limiting the operation to daytime hours, and requiring an attendant to be on hand. The applicant appealed against these conditions, successfully.

In the opinion, the Court analyzed the background of the provisions permitting a "hand laundry," and held that the proposed laundromat was a "hand laundry" and should be permitted as of right.

> ". . . Today, almost all hand laundries require the use of some form of automatic washing machines and driers. The only difference between the use in question here and the ordinary type of hand laundry is that this one is unattended."

> ". . . It seems clear that considering the history of this type of operation, what was intended by the choice of the words 'hand laundry' in the Code was a designation that the laundry allowed in a commercial district must not be industrial, i.e., a laundry plant which was steam operated. It fact, the words 'hand laundry or agency' in themselves show that a hand laundry means a neighborhood commercial laundry as opposed to a steam or industrial laundry in that this classification allows an 'agency' of an industrial laundry in that commercial district, but not the industrial operation itself. Furthermore, the creation in the Code of classifications of commercial and industrial laundry operations implies that it was intended that the difference between the two was to be industrial versus commercial. A laundromat basically derives its value from the service which it provides for its patrons. It does not provide an industrial service, but rather, provides a service of a commercial nature. That is, it gives working men and women ready access to automatic washing procedures whenever they need them just as if they were more fortunate and could afford their own washing machines. This service should be permitted in a commercial district, ordinarily located on the fringes of residential districts, so that it is readily available to the users thereof.

> "From the history of the term 'hand laundry' and the fact that many such laundries had mechanization when the ordinance was adopted it would seem that the word 'hand' does not refer to the method of laundering but is a term used in the laundry industry to designate a neighborhood commercial operation as opposed to steam or industrial operation.

> "Also, the distinction drawn by the court below that uses requiring large amounts of machinery are relegated to industrial districts while uses in commercial districts do not so use machinery is patently insupportable. The expert testimony clearly showed that all but the most primitive of hand laundries do use machinery. A glance at the uses permitted in a commercial district and the ones permitted in an industrial district demonstrates that the number of machines or type of equipment is not a criteria to determine in which district that activity is to be considered.

> "For example, among the specific uses permitted in a commercial district as a matter of right are a central heating plant, telegraph or telephone office, craftsmen's trade shops and job printing, engraving and print reproducing shops, all of which use machinery extensively. The key to determining in which district a laundromat is to be permitted is the 'use' and the type of activity to be performed on the premises. It is our opinion that the use of this property as a laundromat is more analogous to a 'hand laundry' than to a 'laundry (steam)', and we hold it to be so within the meaning of the ordinance."

> ". . . It seems clear that this use as a laundromat is a use of the same general character as a hand laundry, particularly in the light of the mechanized character of the present hand laundries in operation. The mere fact that one is attended while the other is unattended does not change the pattern of zoning which is the deciding factor in whether a certificate shall or shall not be issued. A difference in the manner in which the same type is performed is not a difference in use as prescribed in the ordinance."

The Court also held that a laundromat could also qualify as a use "of the same general character." The variance was therefore unnecessary, and the conditions imposed were invalidated. One judge concurred in the result, in a strange little opinion—arguing first that this was a legislative problem and that a laundromat was not mentioned in the ordinance, and then that a laundromat was so similar to the permitted type of laundry that it should be treated as if it were listed among other similar facilities or household services.

The Pennsylvania courts have therefore found a way to incorporate laundromats—laundry establishments using a new technology—into the general zoning scheme by judicial interpretation, without legislative amendment to take care of such establishments explicitly. Because of the fully permissive structure of the Philadelphia use regulations—where a rather similar type of laundry establishment was listed in the first Commercial District—this did not involve the elaborate litigation which has taken place in other states.* However, as the discussion on the proposed conditions indicates, there are (or may be) somewhat different problems with each such variation in technology; and so a legislative solution in advance, dealing with the new use and whatever problems it creates, is preferable.

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* See for example:
Packer v. *Board of Standards and Appeals*, 62 N. Y. Supplement (2d) 54 (1946), affirmed by memorandum, 271 N. Y. Appellate Division 874, 66 N. Y. Supplement (2d) 634 (1946), leave to appeal denied, 296 N. Y. 1060;
MacMillan v. *McCaffrey*, 201 N. Y. Miscellaneous 574, 106 N. Y. Supplement (2d) 673 (1950);
New York Ambassador v. *Board of Standards and Appeals*, 114 N. Y. Supplement (2d) 901 (1952), reversed, 281 N. Y. Appellate Division 342, 119 N. Y. Supplement (2d) 805 (1953), appellate decision affirmed, 305 New York 791, 113 North Eastern (2d) 302 (1953).

Grange Hall in Residence District

PENNSYLVANIA. *Appeal of Upper St. Clair Township Grange*, 152 Atlantic (2d) 768 (Supreme (highest) Court, July 2, 1959).

A church building located in a single-family residence district was sold to the local Grange for use as a meeting hall. Under the local zoning regulations churches were permitted in such residence districts only by special permit, and a meeting hall for fraternal organizations was permitted only in commercial districts. The Grange sought a variance, which was refused by the highest Pennsylvania court.

In the opinion, the Court held that, whether or not the church building held the status of a non-conforming use, the proposed use for a Grange hall

> ". . . would be a new and decidedly different non-conforming use and certainly one of a lower classification under the zoning ordinance."

One judge concurred, arguing that the church (which pre-dated the zoning ordinance) should not be referred to as a "permissive use," since it had a natural right to expand.

New Jersey Variance For "Special Reasons"—Auto Wrecking Yard Under Bridge

NEW JERSEY. *Mayer* v. *Board of Adjustment of Town of Montclair*, 152 Atlantic (2d) 860 (Superior (lower) Court, June 26, 1959).

In this case, a strip of land was zoned partly for C-1 Commercial and partly for a light manufacturing district, at a point where a main street on a "bridge or causeway" rises 35 feet above the adjoining property. A permit was refused for an automobile wrecking business, on the ground that such an establishment was prohibited in both the districts involved.

In the opinion, the Court held that the prohibitions on junk yards and open storage yards did not apply to the proposed business—described as a "specialty field, not the junk-yard business, as it is commonly known"—and that the unusual grade conditions at this point amounted to "special reasons" and thus justified a variance under the peculiar wording of the New Jersey enabling act.

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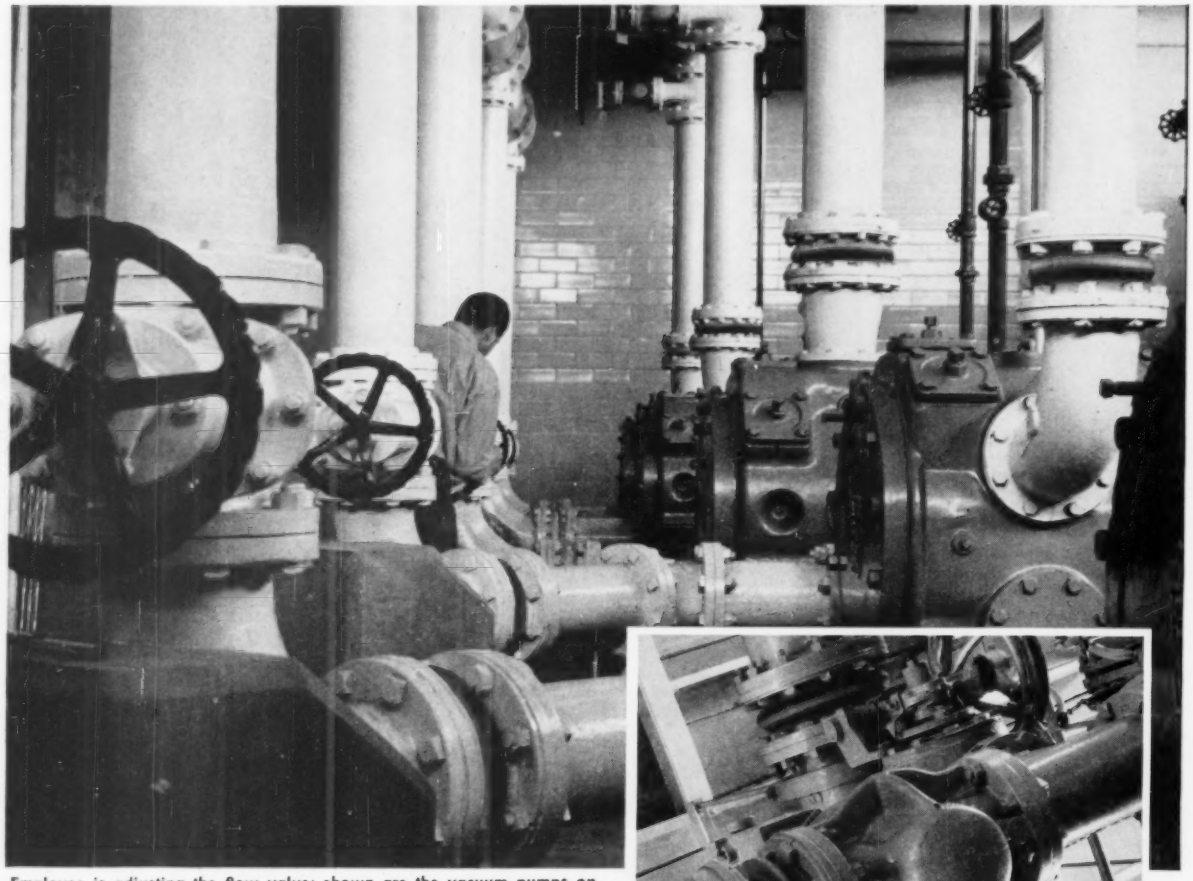
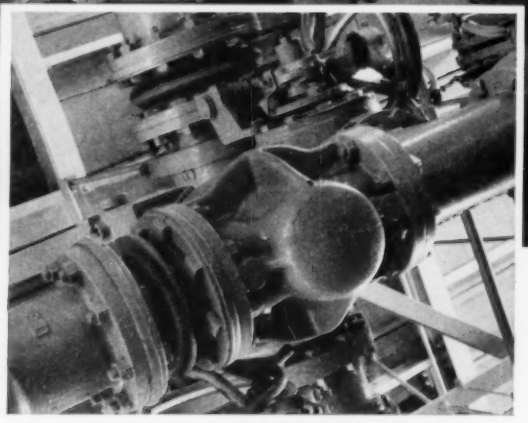


Employee is adjusting the flow valve; shown are the vacuum pumps on which 6" and 10" expansion joints are installed.



Close-up of the 6" joint in the sludge heat building, with the 10" joint in the immediate background.

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Condemnation—
State Must Compensate Village

Where village acquired land for baseball field and operated it for that purpose, held it was acting in proprietary capacity and state must compensate village when taking such property for highway purposes. *Village of Canajoharie* v. *State*, 184 N.Y.S.2d 871 (N. Y. Sup. Ct., App. Div., April 23, 1959)

Condemnation
For Street Extension Invalid

Where ordinance providing for extension of existing street failed to disclose what part of owner's land was to be taken, held that city's petition for condemnation would have to be dismissed. *City of Rockford* v. *Rockford Life Insurance Company*, 157 N.E.2d 21 (Ill., March 20, 1959)

Condemnation—Street Grade Change

In action for assessment of damages and benefits by reason of change in grade of portion of street, held since city had only injured, and had not appropriated any of abutting land only consequential damage was involved. *City of St. Louis* v. *Moehlanhoff*, 322 S.W.2d 155 (Mo., March 17, 1959)

Garbage—Ordinance
Prohibiting Importing Invalid

Where township ordinance prohibited hauling and disposition into township of garbage which originated outside and plaintiff had operated garbage collection and disposal business in township for long period with no complaints as to nuisance, held ordinance invalid. *Lutz* v. *Armour*, 151 A.2d 108 (Pa., May 8, 1959)

Housing—
Lowest Bid for Construction Rejected

Where city housing authority refused to award contract to lowest bidder because under federal government regulations he was ineligible since he had been debarred from contracting with Department of Defense, held action of city approved. *Arthur Venneri Co.* v. *Paterson Housing Authority*, 149 A.2d 228 (N. J., March 10, 1959)

Industrial Development—
Construction of Plant Upheld

In action concerning issuance of revenue bonds for acquisition of site outside the city and construction of industrial plant to be leased to manufacturer with option to renew or purchase, held transaction valid and not "lending of credit." *Bennett* v. *City of Mayfield*, 323 S.W.2d 573 (Ky., April 17, 1959)

Labor Unions—County
Right to Work Law Invalid

In action by employer for injunction to restrain activities designed to induce employer to enter into union shop agreement which was contrary to county "right to work" ordinance, held ordinance invalid as contrary to state-wide policy. *Chavez* v. *Sargent*, 339 P.2d 801 (Calif., May 19, 1959)

Labor Unions—
Right-to-Work Ordinance Invalid

In action to enjoin enforcement of "right-to-work" ordinance, held ordinance void for repugnance to state law encouraging and protecting union shop agreements and for invading field occupied by state to exclusion of local ordinances. *Stephenson* v. *City of Palm Springs*, 340 P.2d 1009 (Cal., June 26, 1959)

Licenses—
Livery Service Regulations Valid

In action by operator of livery service to restrain city from enforcing provisions of licensing ordinance, held even though ordinance proved delivery service and taxicab business in same category, it was not unreasonable or arbitrary. *Chasteen* v. *City of Decatur*, 158 N.E.2d 446 (Ill. App., May 15, 1959)

Nursing Homes—
Town Fire Regulations Upheld

In action concerning validity of town fire-safety regulations for lodging house and nursing home, held statute relating to

(Continued on page 185)

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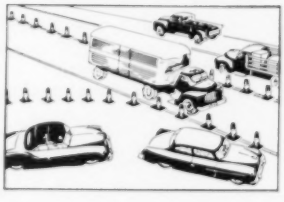

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(Continued from page 183)

licensing of nursing home does not prevent local authorities from applying their rules of fire safety to such home. *Maher* v. *Town of Brookline*, 158 N.E.2d 320 (Mass., May 14, 1959)

Sewers—Damage to Basement From Overflow—Res Ipsa Applies

In action against city for damages sustained when sewage accumulated in basement because of obstruction in city's sewer lateral, held res ipsa loquitor doctrine applies and city liable. *City of Elkhart* v. *Slabaugh*, 157 N.E.2d 842 (Ind. App., April 23, 1959)

Substandard Buildings—Demolition Required

Where evidence supported finding that plaintiff's hotel was so deteriorated that it must be reconstructed to be made safe, held building constituted nuisance and should be demolished. *Stoetzner* v. *City of Los Angeles*, 338 P.2d 971 (Cal. App., May 18, 1959)

Sunday Closing Law Invalid

In action by retail merchants to test validity of "Sunday Closing Law" which excluded from its operations certain ocean resort counties, held law arbitrarily and unlawfully discriminated between members of general public. *Sarner* v. *Union Twp.*, 151 A.2d 208 (N. J. Super. Ct. Law Div., May 7, 1959)

Sunday Closing Ordinance Upheld

In action relating to application for permit to operate coin-operated laundry on 24-hour-a-day, 7-day-a-week basis, held provision in permit requiring store to close on Sundays in accordance with local law was reasonable and valid. *State* v. *City of East Cleveland*, 158 N.E.2d 565 (Ohio App., May 20, 1959)

Sunday Sales Ordinance Valid

In action to enjoin enforcement of ordinance prohibiting auction sales on Sunday, held ordinance not invalid as local law contrary to constitution prohibiting enactment of local law where general law could be made applicable. *ABC Liquidators Inc.* v. *Kansas City*, 322 S.W.2d 876 (Mo., April 13, 1959)

Tort Liability—Motorcycle-Truck Collision—City Not Liable

In action for injuries sustained when plaintiff's motocycle collided with city-owned truck, held plaintiff's excessive speed was proximate cause of accident. *Short* v. *City of Baton Rouge*, 110 So.2d 825 (La. App., March 23, 1959)

Tort Liability—Operation of Merry-Go-Round In Park Governmental

In action for injuries sustained by child injured when he tripped over foot of attendant in charge of merry-go-round in city park, held city engaged in governmental function and not liable. *Carr* v. *City and County of San Francisco*, 338 P.2d 509 (Cal. App., April 30, 1959)

Tort Liability—Sewage Plant Governmental Activity

In action by employee of subcontractor against city for injuries sustained in removing scaffolding on city sewage disposal plant, held city engaged in governmental function and not liable. *Ratliff* v. *City of Akron* 157 N.E.2d 151 (Ohio C. P., Summit Cty., March 17, 1959)

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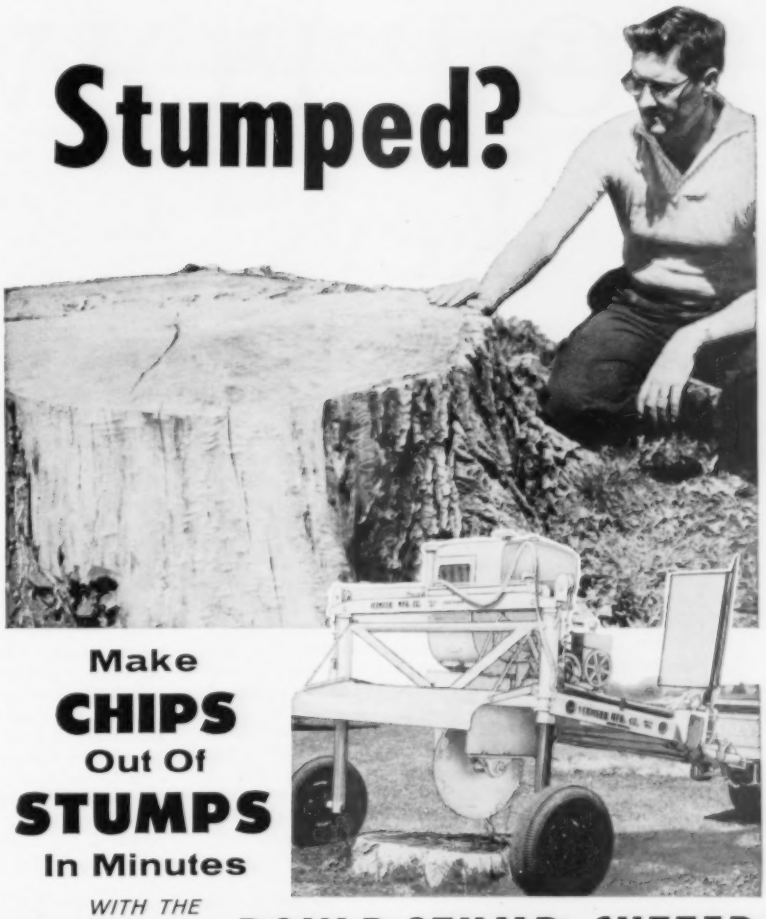

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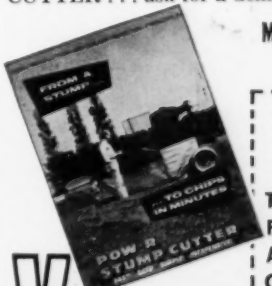

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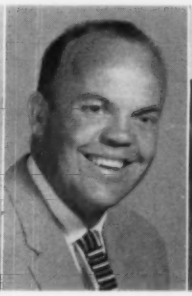
Winslow, Ariz.

Constantine Mitchell
Bensalem Twp., Pa.



Douglas J. Flautt
San Anselmo, Calif.

Melvin L. Reese
Miami, Fla.

John P. Griffin
Madeira, Ohio

O. Lionel Pomroy
Brewer, Maine

JOHN R. ALSPACH, county engineer of Lucas Co., Ohio, was recently appointed as manager of Toledo, Ohio, succeeding Russell W. Rink. Mr. Alspach previously served as director of public service in Toledo.

EDWARD J. BAUGH, assistant manager of Bedford, Ohio, has been appointed manager of Grove City, Ohio.

THOMAS E. CHENOWETH, city manager of St. Louis Park, Minn., has been appointed manager of Springfield, Mo., succeeding W. Barton Avery, deceased. Mr. Chenoweth was previously manager of Hutchinson, Kan., and administrative assistant to the manager at Kansas City, Mo.

DAVID DENHOLM, councilman, is manager of Gaylord, Mich., succeeding Walter E. Looney, now manager of Munising, Mich.

CHARLES M. DIXON, formerly manager of Elberton, Ga., was appointed manager of Ft. Meade, Fla., succeeding Jack Young, now manager at Riviera Beach, Fla. Mr. Dixon previously served as manager of Moultrie and Waycross, Ga.

ALFRED A. DYBIEC, manager of South Fayette Twp., Pa., has been appointed first manager of Turtle Creek, Pa. He was previously assistant manager of Dormont, Pa.

T. J. ELLIOTT succeeds Norman E. Tucker as manager of Forest Park, Ga.

DONALD R. ELLISON, assistant manager of Ludlow, Vt., was recently appointed manager of Cavendish, Vt., succeeding George L. Young, now manager of Northfield, Vt.

DOUGLAS J. FLAUTT, manager of Sanger, Calif., for five years, has been appointed manager of San Anselmo, Calif. Mr. Flautt has also served as manager of Montrose, Calif.

EVERETT F. GRAHAM, was recently appointed manager of St. Albans, Me., succeeding Selden J. Martin, now manager of Pittsfield, Me.

JOHN P. GRIFFIN, administrative assistant in Glencoe, Ill., for the past 3½ years was recently appointed city manager of Madeira, Ohio, succeeding Raymond Cox.

J. A. HARTGETT has been appointed manager of Palatka, Fla., succeeding George C. Martin.

CALVIN C. HENRY, formerly manager of Hazel Park, Mich., was recently appointed manager of Madison, S. D., succeeding Lyle E. Spiering.

MORRIS M. HOWARD, manager of Monahans, Tex., was recently appointed manager of Irving, Tex., succeeding G. A. Scrimshire.

JAMES W. HUBBARD was recently appointed manager of South Bay, Fla., succeeding Lawton E. Caruthers, who resigned to enter private business.

W. M. HUFF, acting manager of Dallas, Ga., was recently appointed manager, succeeding C. J. Griffeth.

HARRY C. HUG, manager of Big Stone Gap, Va., is manager of North Kingstown, R. I., succeeding Roderic A. Gardner.

WILLIAM E. LAWSON, JR., manager of Delray Beach, Fla., was recently appointed manager of St. Augustine, Fla., succeeding G. Marvin Grier. Mr. Lawson has also served as manager of South Boston and Buena Vista, Va.

B. J. MCCARTNEY, assistant of Edinburg, Tex., has been appointed manager of McLean, Tex., succeeding Dan Mize, now manager of Mexia, Tex.

DONALD F. MCINTYRE, administrative assistant of Richmond, Calif., was recently appointed manager of Los Gatos, Calif., succeeding John D. Slater, now manager of Carlsbad, Calif. Mr. McIntyre was previously administrative assistant of San Mateo County, Calif.

GEORGE MINGLE, manager of Portsmouth, Ohio, was recently appointed as manager of Delray Beach, Fla., succeeding William E. Lawson, now manager of St. Augustine, Fla.

CONSTANTINE MITCHELL has been appointed manager of Bensalem Township, Pa. Mr. Mitchell has been auditor and comptroller's field representative with the Pennsylvania Department of Highways and was previously comptroller of four other Pennsylvania departments.

L. R. ORENDORFF, manager at Westerville, Ohio, is manager of Franklin, Ohio, succeeding John Heintz, now manager of Pequannock, N. J. Mr. Orendorff was previously city coordinator in Littleton, Colo.

LAWRENCE W. O'ROURKE, manager of Turlock, Calif. has recently been appointed as the first manager of Commerce, Calif. Mr. O'Rourke has previously served as manager of Tehachapi and Monte Vista, Calif.

JOHN A. PAULUS, manager of Mt. Lebanon, Pa., since 1952 is the first manager of Rye, N. Y. He had been assistant manager in Mt. Lebanon before becoming manager.

ROBERT PEART, manager of Durango, Colo., for the past two years, was recently appointed manager of New Ulm, Minn., succeeding Philip L. White. Mr. Peart had previously been manager of Sterling and Garden City, Kan.; Neosho, Lebanon, and Maryville, Mo.; and Price, Utah.

DONALD J. PEDO, assistant engineer, Oak Creek, Wis., was recently appointed manager of Iron River, Mich. succeeding Robert Zill, now manager of Layside, Wis.

CARROL F. PICKENS, director of research, University City, Mo., has recently been appointed the first manager of Maysville, Ky.

O. LIONEL POMROY, manager of Pittsfield, Me., for the past four years, has been appointed manager of Brewer, Me., succeeding Donald J. Waring, who is going into private business.

MELVIN L. REESE, manager of Montgomery County, Md., for the past five years, has been appointed manager of Miami, Fla., succeeding Ira F. Willard, who resigned to enter private business.

C. C. RYAN, formerly city manager of Upper Arlington, Ohio, was recently appointed as the first manager of Punta Gorda, Fla. Mr. Ryan previously served as clerk-auditor in Grandview, Ohio.

ROLLIN K. SNETHEN, manager of Colorado City, Tex., for the past four years, was recently appointed manager of Corsicana, Tex., succeeding Morgan W. Works, who resigned.

CHARLES E. TRYGG was appointed the first administrative officer of Signal Hills, Calif.

(Continued on page 188)

(Continued from page 187)

HAROLD B. VASEY, for the past five years manager of Mankato, Minn., has been appointed manager of Winslow, Ariz., succeeding A. Perrott-White, who resigned. Mr. Vasey has also served as manager of Montrose, Colo., Brookfield, Mo., and Carlisle, Pa.

GEORGE R. VOLKER, planning director of Turlock, Calif., was recently appointed as manager of that city succeeding Lawrence W. O'Rourke.

WILSON C. WINGATE, acting manager of Jacksonville Beach, Fla., is now manager of that city, succeeding Buford McRae, who resigned to enter private business.

ORIN F. NOLTING
Executive Director
International City Managers' Association

Three Texans Out of Four Live in Cities

Anyone who still believes that everyone in the Lone Star State lives on a ranch in the "wide open spaces" just doesn't know the facts.

At the start of the 1960's more than 75% of all Texas lived in the incorporated municipalities of the state. Before the decade ends, the Texas population will be better than 80% urbanized. In less than 15 years, nine out of ten Texans probably will live in cities.

From 1950 to 1959, the total of incorporated municipalities in Texas increased by 114. The metropolitan cities of Texas grew during that period at a rate of 65%. All cities of more than 10,000 in 1950 increased at an average rate of 64%. There was substantial growth also for cities under 10,000. Three such cities—Irving, Mesquite, and Farmers Branch—more than doubled their population each year for the ten years of the 1950 decade.

Exclusive of state highway programs, Texas municipalities are now making the largest annual capital outlay of any level of government—in excess of $200 million annually.

Texas municipalities — as of the last census of governments in 1957 —were receiving a total of $466.8 million in revenue and expending $528.3 million. Despite rapid urbanization, Texas municipalities raised 97% of local government financial requirements locally, receiving only slightly more than 3% of the total budgets in state assistance. The national average for state assistance to local government is 16%.

Texas has 15 standard metropolitan areas. The 1960 census probably will designate five more: Abilene, Midland-Odessa, Tyler, Longview, and Texarkana (Tex.)-Texarkana (Ark.).

Austin-Western fills bill

Director of Public Works, A. M. McKinnon, City of Mountain View, Calif., says, "We look for three things when we buy equipment. It must do the job quickly and efficiently. Operating and maintenance costs must be reasonable. It must be easy to operate. Our Austin-Western 8 to 12-ton tandem roller meets all three requirements.

No maintenance problems

"We particularly like these features of the A-W—its full width seat which lets operator shift from side to side for better visibility; conveniently located hydraulic controls; smoother, jerk-free rolling because of optional torque converter. We've had the A-W since Aug. 1957 without experiencing any maintenance problems."

If you look for the same things Mr. McKinnon does, an Austin-Western roller will fill the bill for you. It will actually help you stretch your tight budget dollars by doing a better compacting job at lower operating and maintenance costs than other make rollers! We will prove this to your satisfaction.

Facts and figures

Tandem A-W rollers available 5 to 8, 8 to 12, and 10 to 14 tons; 3-wheelers in 8 to 11, 10 to 12, and 12 to 14-ton models. Portable tandem variable from 3½ to 6 tons. Vibratory Roller Compactor and Widener Attachment also available. For full facts and figures, ask your Austin-Western distributor or write directly to us.

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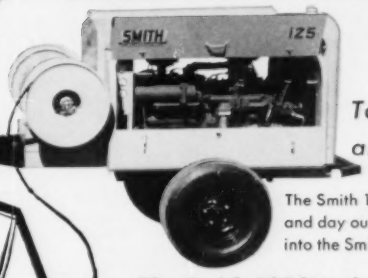
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

TAKE THE "PRESSURE" OFF YOUR AIR COMPRESSOR PROBLEMS . . .

Take "Hardrock Smitty's" advice and **GO SMITH!**



The Smith 125 Air Compressor delivers over 125 cfm day in and day out. Rugged construction, smooth performance built into the Smith 125 means efficient, economical operation.

The Smith 125 has the most wanted features:

- low initial cost
- low operating cost
- easy maintenance
- simple compact design
- 12 volt electrical system
- 125 cfm at 1165 RPM
- availability of parts

Compare price . . . compare job results—you'll Go Smith!

Ask your dealer for an "on the job" demonstration.
(Write us for complete information and the name of your nearest dealer.)

SMITH
AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

Cut road dust and maintenance with SOLVAY CALCIUM CHLORIDE

Using simple equipment to spread Solvay® Calcium Chloride, you can save on unpaved road maintenance all season.

This clean, odorless product prevents dust loss of your road materials. Roads stay in shape with less blading. And, you reduce costly replacements of local gravel, limestone, clay or sand.

Dust conditions and resulting highway accidents are greatly reduced. No wonder road men find that a calcium chloride program is so helpful in winning public support for their department's activities! Get the details in the booklet offered below.

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61 Broadway, New York 6, N. Y.

Please send without obligation "The Solvay Calcium Chloride Road Book." 2-60

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Position_____

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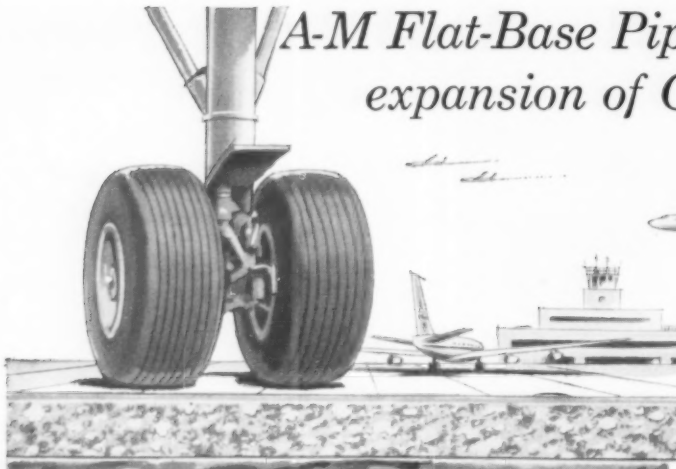
A-M Flat-Base Pipe used in $120,000,000 expansion of Chicago's O'Hare Field



Contractor for installation of this A-M Flat Base watermain gallery: S. J. Groves, Chicago; Architects-Engineers: Naess & Murphy, Chicago.

Utility tunnel designed to withstand 100,000 lb. jet wheel loading

A jet landing strip must necessarily be level—virtually free of dips and cracks. That's why A-M Flat Base Pipe was used for a watermain gallery beneath O'Hare Field's runways as part of its multi-million dollar modernization program—because A-M Concrete Flat Base Pipe has the necessary *rigidity* to resist sagging and tight joints to prevent infiltration. The result is a *dry* utility tunnel —a *strong* tunnel designed to withstand 100,000 lb. jet wheel loadings with complete safety.

Quickly installed, precast Flat Base Pipe can save as much as *30%* in the construction of utility galleries, underpasses, cattle passes and utility manholes. For full details write to:

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

***June 8-10—Hagerstown, Md.**
MARYLAND-DELAWARE WATER AND SEWAGE ASSOC. Annual Meeting (Alexander Hotel). Sec., W. M. Bingley, 7411 N. Charles St., Baltimore, Maryland.

June 14-17—Pittsburgh, Pa.
AMERICAN WATER WORKS ASSOC.—Pennsylvania Section. Annual Meeting (Hilton Hotel). Sec.-Treas., L. S. Morgan, 413 First National Bank Bldg., Greensburg, Pa.

June 15-17—Madison, Wis.
CENTRAL STATES SEWAGE AND INDUSTRIAL WASTES ASSOC. Annual Meeting (Hotel Lorraine). Sec.-Treas., Scott E. Linsley, 2400 Childs Road, St. Paul 6, Minn.

June 15-17—Ottumwa, Iowa
IOWA SEWAGE AND INDUSTRIAL WASTES ASSOC. Annual Meeting (Ottumwa Hotel). Sec., L. F. Skorczeski, 207 South 15th Ave., Marshalltown, Iowa.

June 15-17—Columbus, Ohio
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Meeting (Neil House). Sec.-Treas., C. F. Lay, 101 N. High St., Columbus, Ohio.

June 15-17—Richmond, Va.
VIRGINIA WASTES AND SEWAGE WORKS ASSOC. Annual Meeting (John Marshall Hotel). Sec.-Treas., Orval J. Hand, Hercules Powder Co., Hopewell, Va.

June 15-17—Glenwood Springs, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Meeting (Hotel Colorado). Exec. Sec., Jay T. Bell, 2300 Broadway, Boulder, Colo.

June 15-17—Winona, Minn.
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Meeting (Hotel Winona). Exec. Sec., Orville C. Peterson, 15 University Library Building, Minneapolis 14, Minn.

June 16-18—McCall, Idaho
IDAHO MUNICIPAL LEAGUE. Annual Meeting (Shore Lodge). Dir., Robertson W. Smith, 348 State Street, Weiser, Idaho.

June 19-21—Ocean City, Md.
MARYLAND MUNICIPAL LEAGUE. 12th Annual Conference (Atlantic Hotel). Exec. Sec., Alan Beals, Maryland Municipal League, Box 276, College Park, Md.

June 19-22—Rochester, N. Y.
NEW YORK CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Manger Hotel). Exec. Sec., Addison Mallery, 6 Elk St., Albany, N. Y.

June 26-July 1—Atlantic City, N. J.
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting (Chalfonte-Haddon Hall). Sec., R. J. Painter, 1916 Race St., Philadelphia 3, Pa.

June 27-29—New York, N. Y.
AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. 61st Annual Meeting (Waldorf-Astoria Hotel). Chairman, Wolcott E. Andrews, 238 East 68th St., New York 21, N. Y.

July 17-19—Athens, Ga.
GEORGIA MUNICIPAL ASSOC. Annual Meeting (Georgian Hotel). Exec. Dir., W. E. George, 406 Fulton, Federal Bldg., Atlanta 3, Georgia.

July 18-22—San Francisco, Calif.
NATIONAL ASSOCIATION OF SANITARIANS. Annual Meeting (Jack Tar Hotel). Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

Aug. 10-12—University Park, Pa.
PENNSYLVANIA SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Penna. State University). Sec.-Treas., J. R. Harvey, 996 So. Main St., Meadville, Pa.

Aug. 14-17—Miami Beach, Fla.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Hotel Fontainebleau). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave., N. W., Washington 6, D. C.

Aug. 14-17—New York, N. Y.
AMERICAN PUBLIC WORKS ASSOC. Annual Convention (Manhattan Hotel and New York Coliseum). Exec. Dir., Robert D. Bugher, 1313 E. 60 St., Chicago 37, Ill.

Aug. 14-19—Boston, Mass.
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Statler-Hilton Hotel). Sec., L. C. Chadwick, Dept. of Horticulture, Ohio State Univ., Columbus 10, Ohio.

(Continued on page 193)

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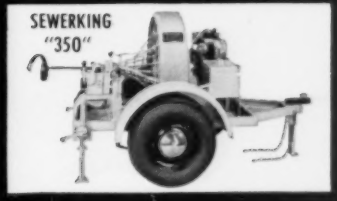

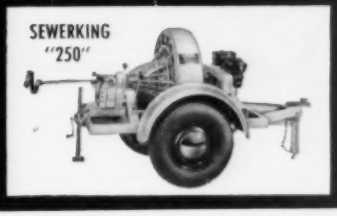

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Whatever your problem come to O'BRIEN for the right, all-power, equipment! Here you will find cable-type rodders, bucket machines, and sectional rod equipment; all designed to *save manpower, work better, and last far longer.* Really trouble-free sewer cleaners that have reduced costs 50%-75% for many cities! Also, a constant factory stock of tools, cutters, solid rods, and cable, to make O'BRIEN your best bet for service!

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SOME OF THE FINEST COMMUNITIES IN THE UNITED STATES HAVE INSTALLED

F&E *multi-cell Incinerator Stokers*

THERE MUST BE A REASON!

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- *Rugged construction —lifetime dependability*
- *Progressive burning for maximum results*

Chicago, Ill., 1920 tons - Detroit, Mich., 2860 tons - Boston, Mass., 900 tons - Cleveland, Ohio, 1400 tons - Washington, D. C., 1000 tons - St. Louis, Mo., 1000 tons - Baltimore, Md., 1400 tons - New Orleans, La., 800 tons - Oyster Bay, N. Y., 500 tons - Cincinnati, Ohio, 400 tons - Columbus, Ohio, 541 tons - Stamford, Conn., 375 tons - Milwaukee, Wis., 300 tons -
Omaha, Neb., 375 tons -
Rochester, N. Y., 200 tons -
Alexandria, Va., 200 tons -
E. Hartford, Conn., 200 tons -
White Plains, N. Y., 400 tons
. . . and many, many more.

F&E Multi-Cell Incinerator Stoker installations represent a tonnage of over 20,000 tons daily.

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BALTIMORE 2, MARYLAND

Conventions—When and Where

(Continued from page 191)

Aug. 31-Sept. 2—Huron, So. Dakota
South Dakota Municipal League. Annual Meeting (Marvin Hughut Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, South Dakota.

***Sept. 5-9—New York, N. Y.**
National Tax Assoc. Annual Meeting (Statler-Hilton Hotel). Dir., Walter J. Kress, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

Sept. 5-9—Colorado Springs, Colo.
International Conference of Building Officials. Annual Conference (Broadmoor Hotel). Mgr. Dir., Hal Colling, 610 South Broadway, Los Angeles 14, Calif.

Sept. 7-9—Watertown, So. Dakota
South Dakota Water & Sewage Works Conference. Annual Conference (Grand Hotel). Sec.-Treas., Don C. Kalda, State Dept. of Health, Pierre, So. Dak.

Sept. 11-15—Long Beach, Calif.
American Institute of Park Executives. Annual Convention (Lafayette Hotel). Exec. Sec., Alfred B. LaGasse, Oglebay Park, Wheeling, W. Va.

Sept. 11-16—Pittsburgh, Pa.
Illuminating Engineering Society. National Technical Conference (Penn-Sheraton Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

Sept. 12-14—Knoxville, Tenn.
American Water Works Assoc.—Kentucky-Tenn. Section. Annual Meeting (Andrew Jackson Hotel). Sec-Treas., Harold F. Mount, 5400 Preston Hwy., Louisville, Ky.

Sept. 12-15—Rochester, N. Y.
International Association of Fire Chiefs. Annual Meeting (Manger Hotel). Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

Sept. 12-16—Chicago, Ill.
Institute of Traffic Engineers. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., David M. Baldwin, 2029 K St., N.W., Washington 6, D. C.

***Sept. 14-16—St. Joseph, Mo.**
Missouri Municipal League. Annual Convention (Robidoux Hotel). Exec. Dir., Bruce J. Carl, Guitar Bldg., Columbia, Missouri.

Sept. 14-16—Saranac Inn, N. Y.
American Water Works Assoc.—N. Y. Section. Annual Meeting (Saranac Inn). Sec.-Treas., Kimball Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City, New York.

Sept. 14-16—Virginia Beach, Va.
American Water Works Assoc.—Virginia Section. Annual Meeting (Cavalier Hotel). Sec., E. H. Ruehl, c/o R. Stuart Royer & Assoc., 15 W. Cary St., Richmond, Va.

Sept. 15-17—Salt Lake City, Utah
Utah Municipal League. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 18-21—York, Pa.**
Pennsylvania League of Cities. Annual Meeting (Yorktowne Hotel). Exec. Dir., J. N. O'Neil, 506 State St. Bldg., Harrisburg, Pa.

Sept. 18-21—Denver, Colo.
International Assoc. of Assessing Officers. Annual Meeting (Hilton Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago, Ill.

Sept. 18-22—Montreal, Canada
New England Water Works Assoc. Annual Meeting (Queen Elizabeth Hotel). Sec., Joseph C. Knox, 73 Tremont Street, Boston 8, Mass.

Sept. 18-20—Wichita, Kansas
League of Kansas Municipalities. Annual Convention (Hotel Broadview). Exec. Dir., E. A. Mosher, 112 West 7th, Topeka, Kansas.

Sept. 18-20—Roanoke, Va.
League of Virginia Municipalities. Annual Meeting (Roanoke Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Virginia.

Sept. 19-21—Atlanta, Ga.
National Conference for County Engineers and Officials. Annual Meeting (Atlanta Biltmore Hotel). Dir., Ben F. Ostergren, County Division, ARBA, 600 World Center Bldg., Washington 6, D. C.

Sept. 19-22—New York, N. Y.
International Municipal Signal Assoc. Annual Conference (Hotel Astor.) Sec., Irvin Shulsinger, 130 West 42nd St., New York 36, N. Y.

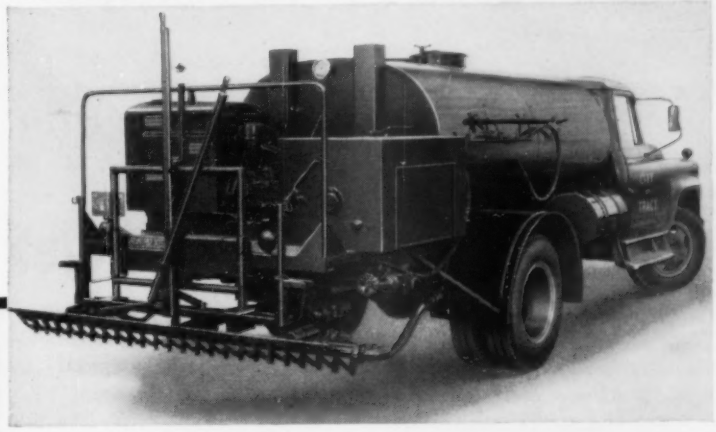
Sept. 19-23—Boston, Mass.
National Municipal Cemetery Conference. Annual Meeting (Statler Hotel). Sec., Vernon J. Birkhimer, Bureau of Cemeteries, 4809 W. Franklin St., Richmond 26, Va.

(Continued on page 194)

Standard Steel Model 658

Road-a-Mite

combines both
ECONOMY and PERFORMANCE



A Mighty Road-Builder with TODAY'S COMPACT CAR DESIGN!

On the working end of the Model 658 is a newly designed 12′ full-circulating spray bar. Turn-up ends provide for additional sections up to 24′ in length. Mechanical lateral shift and hydraulic vertical adjustment are standard.

The Model 658 provides the small community with equipment at a small investment so that they can more easily protect a larger investment in roads and streets. This compact new unit also provides the small city or beginning contractor with adequate means for blacktop construction work. The Model 658 provides low-cost secondary support to operators of the bigger pressure distributors.

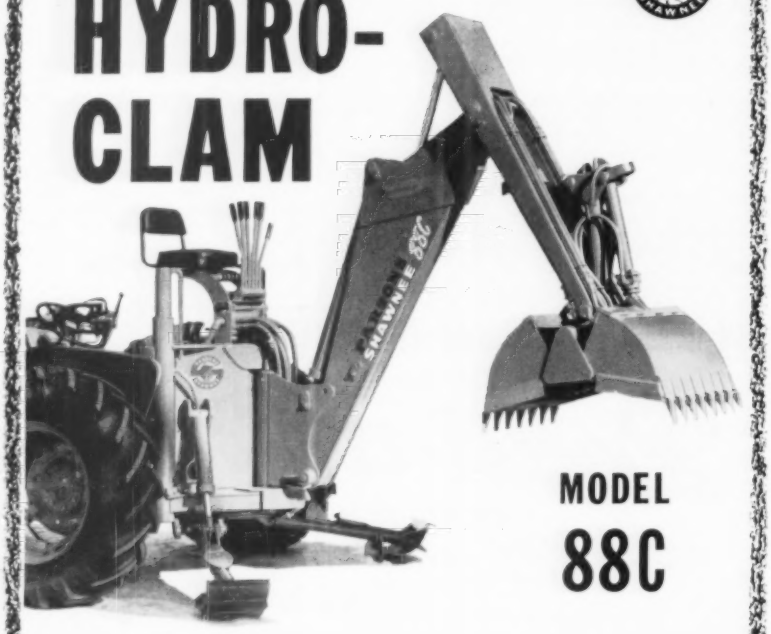
Built to the Highest Standard

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS SHELVING HARDWARE . . PIPE LINE EQUIPMENT . . SUPPLY TANKS AND AGRICULTURAL EQUIPMENT

658-1 **Standard Steel Works, Inc.** NORTH KANSAS CITY, MO.

New SHAWNEE

HYDRO-CLAM



MODEL 88C

Speeds Spot Excavation, Carves Smooth, Clean Holes

Here's a low-cost way to speed spot excavation work, open bell holes or dig under sidewalks — new Shawnee 88-C Hydro-Clam. It mounts easily on most tractors . . . can dig to 12′ depths quickly in congested areas or cramped quarters. Clam bowls operate independently or together for producing level floor and smooth, clean sides. "Hydaway" hydraulic design protects cylinders, pistons, and hoses — makes Hydro-Clam a low maintenance unit. Ask your Shawnee Utility Tractor Dealer for details.

New 88-C Hydro-Clam Condensed Specifications

Breakout: 10,000 lbs.
Lift Capacity: 3,000 lbs.
Boom Swing: 180°
Reach from Pivot: 14′7″
Digging Depth: 12′
Dumping Height: 9′9″
Bucket Capacities: 3 to 5 cu. ft.
Bucket Widths: 16″, 18″, 20″, 24″

PARSONS COMPANY
SHAWNEE DEPT.
Newton, Iowa

A Division of OEHRING Company

SEND NEW ENGINEERING BULLETIN PS751 ON NEW SHAWNEE 88-C HYDRO-CLAM

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Conventions— When and Where

(Continued from page 193)

Sept. 20-23—Grand Rapids, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Pantlind Hotel). Dir., John H. Huess, 205 South State St., Ann Arbor, Michigan.

Sept. 20-23—Minneapolis, Minn.
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Lexington Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Georgia.

Sept. 21-23—Traverse City, Mich.
AMERICAN WATER WORKS ASSOC.—Michigan Section. Annual Meeting (Park Place Hotel). Exec. Sec., T. L. Vander Velde, Dept. of Health, Lansing 4, Mich.

Sept. 21-23—Sioux Falls, So. Dakota
AMERICAN WATER WORKS ASSOC.—North Central Section. Annual Meeting (Sheraton & Cataract Hotels. Exec. Sec., Carl A. Flack, St. Paul Water Dept., 216 Courthouse, St. Paul 2, Minn.

Sept. 21-23—Cincinnati, Ohio
OHIO MUNICIPAL LEAGUE. Annual Meeting (Sheraton-Gibson Hotel). Exec. Dir. J. P. Coleman, 60 East Broad Street, Columbus 15, Ohio.

Sept. 25-27—Jefferson City, Mo.
MISSOURI SEWAGE & INDUSTRIAL WASTES Assoc. Annual Meeting (Hotel Governor). Sec.-Treas., W. A. Kramer, Div. of Health, State Office Bldg., Jefferson City, Missouri.

Sept. 25-28—Palo Alto, Calif.
NATIONAL ASSOC. OF TAX ADMINISTRATORS. Annual Meeting (Rickey's Studio Inn). Exec. Sec., Charles F. Conlon, 1313 East 60th St., Chicago 37, Ill.

Sept. 25-28—Philadelphia, Pa.
PENNSYLVANIA MUNICIPAL AUTHORITIES Assoc. Annual Meeting (Ben Franklin Hotel). Sec., Chas F. Beeduber, 506 State St. Bldg., Harrisburg, Pa.

Sept. 25-29—Denver, Colo.
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICIALS. Annual Meeting (Brown Palace). Exec. Sec., Charles S. Rhyne, 839 17th St., N.W., Washington 6, D. C.

Sept. 26-30—Washington, D. C.
NATIONAL RECREATION CONGRESS. Annual Convention (Shoreham Hotel). Sec., Willard B. Stone, 8 W. 8th St., New York, N. Y.

***Sept. 28-30—Prince Edward Is., Can.**
AMERICAN WATER WORKS ASSOC.—Canadian Section-Maritime Branch. Annual Meeting. (Charlottetown Hotel). Sec., J. D. Kline, P. O. Box 608, Halifax, Nova Scotia, Canada.

Sept. 28-30—Madison, Wis.
AMERICAN WATER WORKS ASSOC.—Wisconsin Section. Annual Meeting (Loraine Hotel). Exec. Sec., Harry Breimeister, Utilities Engr., City of Milwaukee, 607 Municipal Bldg., Milwaukee 2, Wisconsin.

***Oct. 1-4—Springfield, Ill.**
ILLINOIS MUNICIPAL LEAGUE. Annual Meeting (Leland Hotel). Dir., A. L. Sargent, 537 South 4th Street, Springfield, Ill.

***Oct. 2-4—Galveston, Texas**
TEXAS MUNICIPAL LEAGUE. Annual Meeting (Galvez and Buccaneer Hotels.) Dir., Steve Matthews, 402 Vaughn Bldg., Austin 1, Texas.

***Oct. 2-6—Detroit, Mich.**
NATIONAL ASSOCIATION OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., John O. Lange, 1313 E. 60th St., Chicago, Ill.

***Oct. 2-6—Washington, D. C.**
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Meeting (Hotel Statler). Exec. Sec., Leroy E. Wike, Mills Bldg., Washington 6, D. C.

Oct. 2-6—Philadelphia, Pa.
WATER POLLUTION CONTROL FEDERATION (formerly the Federation of Sewage and Industral Wastes Associations). Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave., N.W., Washington 16, D. C.

***Oct. 2-9—Montevideo, Uruguay**
INTER-AMERICAN ASSOCIATION OF SANITARY ENGINEERING. Annual Meeting (Hotel Carrasco). Sec. Gen., F. W. Montanari, 414 Walnut Street, Room 302, Cincinnati 2, Ohio.

How Springfield Was "De-Starlingized"

Everybody in Springfield, Ill., was annoyed by the infestation of starlings. Residents complained about the smell. People couldn't sleep because of their unmelodious chattering. And Clarence Klassen, Illinois' Chief Sanitary Engineer, advised that the bird droppings would aggravate fly-breeding problems. Consequently, the Springfield city council decided to do something about it.

However, rather than try some bird-catching themselves, they enlisted the aid of the U. S. Field and Wildlife Service, and also the State Conservation Commission. Together, the three groups planned the anti-starling strategy.

The trap consisted of a 60-foot-long net with a 35-foot diameter opening, tapering down to a tent with three 1,000-watt lights mounted on the floor. Twenty "beaters" then went out into the area where the starlings were most troublesome, one dark moonless night about 8 p.m., and began to frighten the birds. They yelled, threw firecrackers into the air, rattled noisemakers. The starlings started to move, attracted toward the lighted tent. As the beaters closed in, birds flew into the tent's mouth by the thousands. Finally, the anti-starling brigade closed the door and gassed the birds. Their catch was about 20,000 birds, although no one counted them closely.

This was one of the first such drives ever undertaken in this area. It attracted federal and state officials from Illinois, Minnesota, Missouri and Indiana. ◄◄

KA-MO DRILL RIG Sets Fast Pace on Lighting Project

Only 1½ minutes per hole — that's what this Ka-Mo unit averaged on a recent street lighting project calling for 20″ diameter hole drilled to 6′ depths. The drill is hydraulically operated — takes its power from the tractor's PTO.

For a fast and economical answer to your drilling and boring problems, contact your Ka-Mo drilling specialist. His intimate knowledge of the field, combined with the quality of Ka-Mo equipment line, have helped keep toughest jobs ahead of schedule and within budget. Look to Ka-Mo for drill sizes from 2″ to 48″ in diameter, and larger. KAM3

KA MO **KWIK-MIX COMPANY**
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Send for new Ka-Mo Engineering Bulletin
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STREET .....
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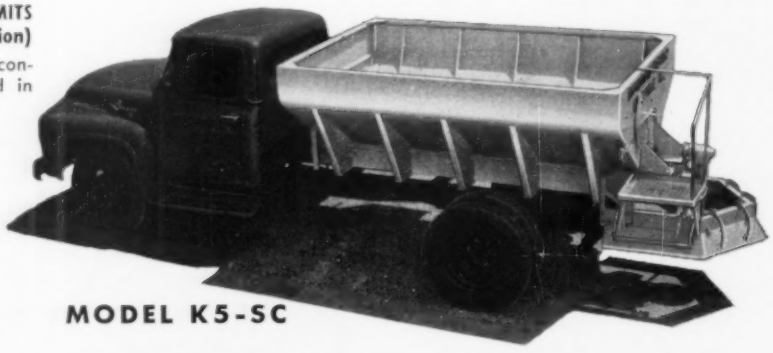
CAB CONTROLLED VACUUM CLUTCH PERMITS SPOT SPREADING (on mechanical operation)

Completely sealed, vacuum operation, controlled from cab. Start or stop spread in motion, as at intersections, safety zones. On hydraulic operation models, spot spreading is controlled by by-pass valve.

TWO-SPEED "QUICK CHANGE" MECHANISM

Simple sprocket and chain drive: low for chemical spreading, high for large-volume spreading. No need for expensive automotive transmission. On hydraulic opetation models, spreading volume is valve controlled.



MODEL K5-SC

WRITE FOR BULLETIN A-442

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307 SHIPMAN ROAD • JERSEYVILLE, ILL.

Where you want **nothing** to grow

SS WEED-KILLER

Gets them fast
Gets them all
Keeps them off

Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. . . . Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth. . . .

Reduces fire hazard by eliminating flammable vegetation close to industrial locations. . . . Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass. . . . Cuts ground maintenance costs drastically. . . . One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Industrial Water

1954 CENSUS OF MANUFACTURES, INDUSTRIAL WATER USE SUPPLEMENT—*Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.* 1960. 51 *pp.* 35 *cents.*

This report tells how much water various industries use. While it identifies the type of industry, it does not give enough data to spell out accurately what such an industry would use if it came to your town. One can make an approximation, however, by using employees, listed in the data, as a means of comparison.

Another "Philadelphia Story"

THE ART OF GOVERNMENT—*By James Reichley. The Fund for the Republic, 60 East 42nd Street, New York 17, N. Y.* 1959. 128 *pp. Single copies free.*

Anyone who still doubts the vigor and independent thought wrapped up in the governments of our big cities ought to read this book. It is a dramatic account of the ousting of the old Republican regime in Philadelphia by a reform group within the Democratic party—a group incidentally that the Democratic organization views with skepticism. It also recounts the soul-searching within the Republican organization and its resurgence with younger men and women. The problems associated with minority groups, racial tensions, racketeer infiltration, lawlessness all are discussed with frankness and clarity.

This, of course, is no new story for our nation's urban areas. It is being repeated in innumerable locations in some manner, both in large city and in small. While it is an account of trials of strength, nowhere in it do you find pessimism or defeat. This also is true of urban areas across the nation.

Water Rate Study

MODERN WATER RATES—*Published by* THE AMERICAN CITY, 470 *Park Avenue South, New York 16, New York.* 1960. 86 *pp.* $2.75 *prepaid;* $3 *collect.*

A group of articles in booklet form setting forth current practice in making charges for water supply. The series includes significant data on rates used by 127 water systems throughout the country, including privately owned water companies, municipally administered systems and "authorities." Some serve several municipalities. The booklet also contains the two-part article by Harris F. Seidel, Superintendent, Water and Sewage Treatment, Ames, Iowa, entitled "How Municipal Water Rates Operate."

Local Government Explained

WHY?—*Office of the City Manager, Municipal Building, Hamilton, Ohio.* 1960. 37 *pp.*

An inexpensive, but eye-catching little booklet designed to tell Hamilton's teenagers the story of how the city operates. It dramatizes the services provided and answers the questions most frequently asked.

The booklet represents good, alert practice in any city. We suggest getting a copy and seeing if your city can do better.

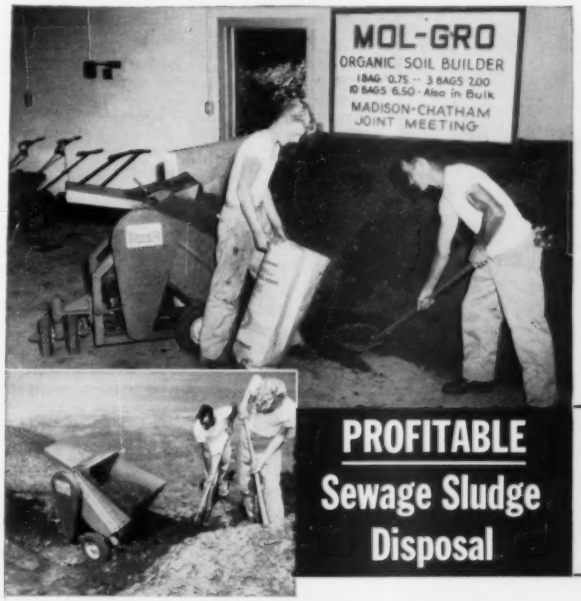
Criminal Traits

PREDICTING DELINQUENCY AND CRIME—*By Sheldon and Eleanor Glueck. Harvard University Press, Cambridge 38, Massachusetts.* 1959. 283 *pp.* $6.50.

Ths book should be labeled with big, red letters, "Danger, handle with care!" It obviously is a study that needed to be made. It reaches for the high and humanitarian goal of overcoming the inconsistencies in sentencing for criminal offenses that tend to undermine faith in justice itself. Nevertheless, the factors that the authors present in their bold effort to reach this goal almost frighten one.

Using three factors, a sociologist presumably can interview a culprit, enter his characteristics on the all-too-familiar punched card, then flick an electronic gear box, and get a prediction on the culprit's behavior during probation, during probation with suspended sentence, at correctional schools or after completion of a sentence. The judge, then, would base his sentence on the opinion rendered

(Continued on page 198)



PROFITABLE Sewage Sludge Disposal

described in FREE DATALOG

The Madison-Chatham (N.J.) Joint Meeting bags and sells their *Royerated sewage sludge cake.* While not big business, the operation does represent an additional source of municipal income.

The need for increasing municipal income, keeps growing in importance. The climate of today's economy warns against tax increases. Economies of operation are being searched for.

One of the most obvious economies that any organization can practice is the elimination of waste. Yet many sewage plants continue to dump or burn their sludge cake — throwing away or sending possible income up in smoke.

In April 1957, Royer published a new edition of their "Sewage Sludge Utilization Datalog," pointing the way to turning sewage from an expense into a profit. Since then, we've gone through two printings.

If your community is still destroying this source of revenue, write today—and learn how you, too, may experience *profitable sewage sludge* disposal.

Please send me a copy of your new edition of the information-packed "Sewage Sludge Utilization Datalog."

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☐ I am interested in a demonstration of the Royer Shredder at work.

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THE BEST
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Other trenchers cost "More or Less"
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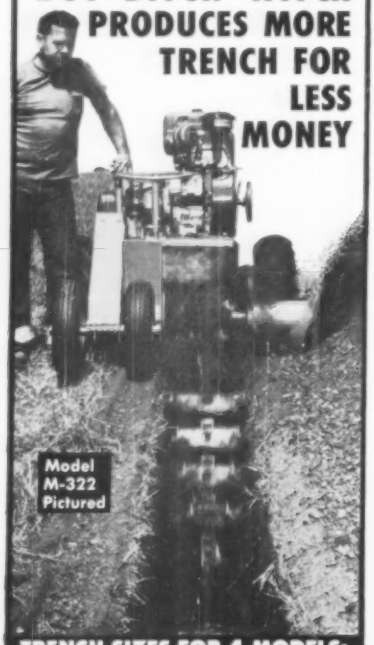

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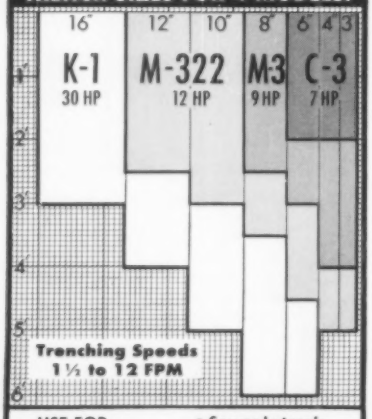

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(Continued from page 197)

by this mechanized method. The authors do not mention the use of punched cards, but the application is all too apparent.

This in itself sounds fine, but the predictive factors that the authors use are awe-inspiring. For example, if your father were born in Poland, Russia, or Lithuania, you score better than you would if he were born in the United States. If your father's discipline was firm but kindly, you score better than under overstrict or lax discipline. "Fair but kindly," the authors explain, is discipline that the child believes is fair. On this basis, the average family with teen-agers might as well surrender the use of the car, the telephone, and any effort to get the youngsters in before 2:00 a.m.

If you have a lot of brothers and sisters, your score is more favorable than if you have few, or are an only child. If you began work at an age less than 15 years, you score much more favorably than you would starting work at a later age. Apparently child-labor laws breed delinquents.

If your mother was older than 21 when she married your father, you score lots better than if she were less than 21. Regular church membership gives you a slight edge over irregular, but not much.

The authors have no factors relating to *racial* backgrounds. However, they do seem to rely on nationality, and seem particularly annoyed with the Irish.

It is a worth-while book for welfare departments, parole officers, judges, and school officials, but as we said, it should be handled with care, and considered a guide. Rarely is there a rule or set of rules that can be used as a complete substitute for a little exercise of the cranium.

Zoning Boards of Appeal

ZONING BOARDS OF APPEAL—*League of Wisconsin Municipalities, 30 East Johnson Street, Madison 3, Wisconsin.* 1960. 54 *pp.* $3.

An informative book for any city. Although this is based on Wisconsin law, it should be useful in almost any state, with adaptations. Its section dealing with rules of procedure should be particularly helpful.

Street Trees

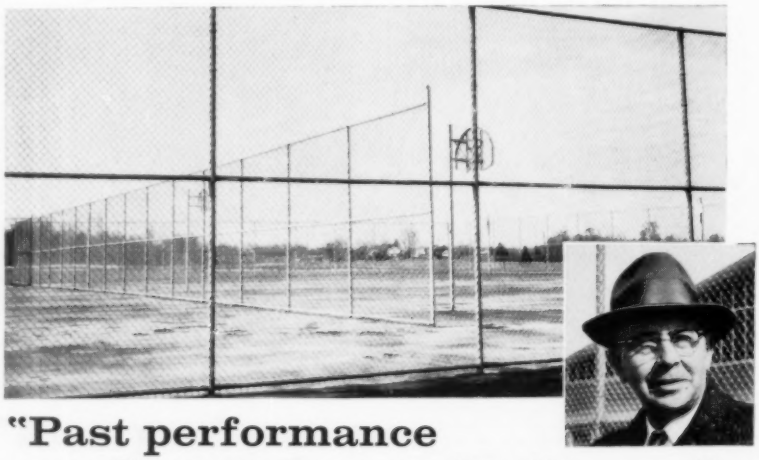
MUNICIPAL STREET TREES—*League of Wisconsin Municipalities, 30 East Johnson Street, Madison 3, Wisconsin.* 1960. 59 *pp.* $3.

Although this was written for Wisconsin municipalities, it is a good, practical handbook for any city, particularly the small one. It tells how to set up a program, suggests ordinances, gives guides on how to select trees, how to plant them so that they won't create street hazards or problems, how to prune them and how to keep insect pests away from them.

Water Utilities

PUBLIC VS. PRIVATE OWNERSHIP OF THE LOCAL WATER COMPANY—*Governmental Affairs and Tax Research Department, Chamber of Commerce, Gary, Ind.* 1960. 56 *pp.* $2; *limited supply.*

Garyites look into the merits of buying their privately owned water company, decide against it—for good reason. The Gary-Hobart Water Company is well known for its excellent management.



"Past performance predisposed us to Anchor . . ."
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"About 25 years ago we installed Anchor Fence around the ball field at our old high school. When we built our new high school we were confronted with much the same problems of controlling admission to the athletic fields and preventing the children from running off the field into the street. Naturally, past performance predisposed us to Anchor Fence. Of course we advertised for bids. Anchor was finally picked because of its quality, lower cost, and minimal need for maintenance. As we expected, everyone concerned is very pleased with the Anchor chain link fence."
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Regional Government

INTERGOVERNMENTAL PROBLEMS IN THE CHAGRIN FALLS AREA—*Cleveland Bureau of Governmental Research, 10-10 Euclid Building, Cleveland 15, Ohio.* 1960. 39 *pp.* $2. *

An idealistic little report which says, basically, that the people of Chagrin Falls can get better water supply, sewerage service, and storm drainage by area-wide service organizations. It also urges participation in regional planning. These are conclusions that Chagrin Fallites probably would accept.

However, the report goes on to recommend certain village consolidations and abolition of the township government. These will be particularly tough parcels to sell. The researchers undoubtedly felt that an opinion like this is necessary. Nevertheless, it probably will endanger acceptance of any portion.

Employee Benefits In Connecticut

EMPLOYEE BENEFITS IN CONNECTICUT PUBLIC AND PRIVATE EMPLOYMENT. . . . A COMPARISON—*By Rosaline Levenson. Institute of Public Service, The University of Connecticut. Storrs, Connecticut.* 1959. 59 *pp.* $1.

A summary that shows that in Connecticut at least, municipal employees receive benefits about as generous as those in the employ of state, federal or private agencies. Their working hours are a little shorter, they get rest "breaks," they have fewer holidays, somewhat less generous vacation allowances. Employees in small towns receive fewer benefits than those in the larger cities.

Subdivisions

SUBDIVISION STANDARDS—*Tennessee State Planning Commission, Cordell Hull Building, Nashville, Tenn.* 1959. 30 *pp.* $1.

Only a guide, the authors almost plead. But it is an instructive one—good to compare with your own community's subdivision standards, and then ask whether you can justify the difference.

Property Values vs. Integration

PROPERTY VALUES AND RACE—*By Luigi Laurent. University of California Press, Berkeley 4, Calif.* 1960. 256 *pp.* $6.

Justification of racially segregated neighborhoods on the theory that it protects property values takes a beating in this book. In fact, the author often finds that values will rise when non-whites move into an all-white area.

The conclusions result from intensive studies of Oakland, San Francisco, and Philadelphia; and real estate investigations in Chicago, Kansas City, Detroit and Portland, Ore.

Nashville Area Growth

THE ESTIMATED DISTRIBUTION OF POPULATION OF DAVIDSON COUNTY, TENN., 1950-58—*The Nashville City and Davidson County Planning Commissions, Advance Planning Division, 305 City Office Building, 2nd Avenue, South and Lindsley, Nashville 10, Tenn.,* 1960. 53 *pp.*

This documents a pattern that is being repeated in almost every metropolitan area. The growth is in the outer areas and the loss of population is in the central district. It warns also of a future trend that is occurring elsewhere—that the cost of providing municipal services in these lightly populated areas is going to rise uncomfortably. The new developments are absorbing land with more efficient land use and may cause a revaluation of urban services here.

Citizens' Association

A STUDY OF THE EFFECTIVENESS OF A CITIZENS' ASSOCIATION IN MUNICIPAL GOVERNMENT—*Richmond Professional Institute of The College of William and Mary, Richmond, Va.* 1960. 40 *pp.* $2.50.

A study of the citizens' commttee in Richmond, Va., and its role in that city's government and, in particular, the council-manager form. The investigators conclude in scholarly style that the Association should re-establish its old zeal and broaden its activities for the good of the city.

(Continued on page 200)

REPRESENTATIVE MUNICIPAL BOND ISSUES

From April 4th to May 3rd, 1960

Date of Issue	*Locality*	*Amount in $1,000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
4/ 5/60	Buffalo Sewer Authority, N. Y.	1,500	Sewer Revenue	14	3.30	3.28
4/ 5/60	Jonesboro, Ark.	1,000	Industrial Plant Gen. Obl.	..	..	4.17
4/ 5/60	Palmetto, Fla.	1,500	Water and Sewer Revenue	30	4.80	4.95
4/ 5/60	St. Clair Shores, Mich.	820	Motor Vehicle Highway	8½	..	4.56
4/ 6/60	Dunkirk, N. Y.	1,972	Water and Sewer	15	3.70	3.67
4/ 7/60	Arlington, Tex.	1,000	General Obligation	12½	..	4.00
4/ 7/60	Springfield, Ohio	1,800	Sewage Treatment Plant	14	3.75	3.66
4/11/60	Brookline, Mass.	1,000	Tax Anticipation	½	2.02	2.02
4/12/60	Manchester, N. H.	1,040	Mun. Imp. and Equipment	10½	3.50	3.45
4/12/60	Oyster Bay, N. Y., Drainage District No. 1	2,500	Drainage	15½	3.90	3.85
4/13/60	Quincy, Mass.	1,000	Tax Anticipation	½	2.19	2.19
4/18/60	El Cerrito, Calif.	750	City Improvement	..	..	3.79
4/18/60	Elyria, Ohio	1,100	Waterworks Imp. and Extension	13½	4.00	3.90
4/20/60	Philadelphia, Pa.	29,260	General Obligation	..	..	3.77
4/21/60	Fulton County, Ga.	9,600	Various Purposes	14⅔	3.25	3.48
4/25/60	Shaker Heights, Ohio	1,200	Sewer and Drain	11	3.50	3.38
4/28/60	Union City, N. J.	2,868	Sewer, Redevelopment, School	14½	4.35	4.34
5/ 3/60	Cook County, Ill.	9,500	County Hospital	20½	3.75	3.68
5/ 3/60	Wheatfield, N. Y., Water District	2,750	Water	16½	4.00	3.94

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kills flies, larvae and pupae

without damage to zoogleal film

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without reducing filter efficiency

NEW INHIBITORY FACTOR—Hundreds of tests have demonstrated that R.S.C. is extremely effective in killing Psychodae which have shown high degree of resistance to DDT, Methoxychlor, Lindane, Chlordane, Dieldrin, Aldrin, Malathion and other insecticides.

This is accomplished by an inhibitory factor which renders a hitherto resistant fly susceptible to the insecticides in the R.S.C. formula. Field tests in such widely separated areas as Illinois, Texas, Florida have shown that use of R.S.C. reduces filter fly population to practically nil.

EASY TO USE—Dose with R.S.C. liquid concentrate through primary effluent and spray surrounding surfaces to kill flying adults.

SAFE, ECONOMICAL—R.S.C. is registered by the United States Department of Agriculture for control of Psychoda flies. When used according to directions, R.S.C. is safe, economical, and the most effective method of filter fly control to date.

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(Continued from page 199)

Radiation Control

RADIATION CONTROL FOR FIRE AND OTHER EMERGENCY FORCES—*National Fire Protection Association, Boston.* 1960. 256 *pp.* $4.75.

This book brings together material on situations involving radioactivity. It covers necessary modifications of fire fighting techniques, training of fire forces, and inspections of property where radiation hazards may exist.

Other topics range from the effects of nuclear radiation on the human body and radioactivitp measuring instruments to clean-up of radioactive materials spillage and nuclear bomb effects.

A Nuclear-Safe City

THE SCHOHARIE VALLEY TOWNSITE—A PROTECTED COMMUNITY FOR THE NUCLEAR AGE —*Graduate Students of City and Regional Planning, College of Architecture, Cornell University, Ithaca, N. Y.* 1960, 59 *pp.*

Architectural students at Cornell University stop arguing "whether" a city can survive a nuclear attack, and switch to telling "how." The report is encouraging, but gives city planners and administrators a good deal to consider.

ADMINISTRATION & GOVERNMENT

ALLEGHENY COUNTY, PA.—Wage and Salary Programs. Institute of Local Government, University of Pittsburgh, Pittsburgh, Pa. 1959. 36 pp. $1.

MONTGOMERY COUNTY, MD.—Report of the Committee on Conflicts of Interest. Office of the County Manager, County Office Building, Rockville, Md. 1959. 18 pp.

PHILADELPHIA, PA.—Department of Licenses and Inspections Annual Report. 1958. 49 pp.—Living and Improving. 1959. 16 pp. Both available from the Division of Public Information, Office of the City Representative, City Hall, Philadelphia, Pa.

RICHMOND, CALIF. — Entry by Richmond, Calif., in 1959 AMA *Overall* Award for Year-Round Public Relations Program. Office of the City Manager, City Hall, Richmond, Calif. 1959. 80 pp.

ANNUAL REPORTS WORTH READING

BEEVILLE, TEX. — Beeville 1959 Progress Report. Office of the City Manager, 100 West Corpus Christi St., Beeville, Tex. 1960. 8 pp.

CINCINNATI, OHIO — 1959 Annual Report. Bureau of Air Pollution Control and Heating Inspection, City Hall, Cincinnati, Ohio. 1960. 38 pp.

DETROIT, MICH. — Annual Report of the City of Detroit. Office of the Auditor General, 1312 City-County Bldg., Detroit, Michigan, 1959. 127 pp.

FORT PIERCE, FLA.—First Annual Report. Office of the City Manager, P. O. Box 660, Fort Pierce, Fla. 1959. 10 pp.

LONG BEACH, CALIF.—Annual Report, Long Beach Water Department. Water Department, 215 W. B'way, Long Beach, Calif. 1959. 22 pp.

Clean Water Meters now in FIVE Minutes —

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Los Angeles, Calif. — Annual Report, Water & Power. Director of Public Relations, Department of Water and Power, 207 South Broadway, Los Angeles 12, Calif. 1959. 32 pp.

New Orleans, La.—Annual Report of the Mayor. Office of the Mayor, Cty Hall, New Orleans, La. 1959. 64 pp.

FINANCE & TAXATION

Dallas, Tex.—Annual Financial Statement. Office of the City Auditor, City Hall, Dallas, Tex. 1959. 109 pp.

Michigan—Michigan Municipal Wages, Salaries and Fringe Benefits; Bulletin No. 93. Michigan Municipal League, 205 South State Street, Ann Arbor, Mich. 1960. 150 pp.

MISCELLANEOUS

Iowa—City and Community Measurement, A Statistical Reference for 19 Iowa Cities. Office of the City Manager, City Hall, Sioux City, Ia. 1959. 88 pp.

PLANNING, ZONING & HOUSING

General—Central Business Districts; Exchange Bibliography No. 12. Committee of Planning Librarians, 6318 Thornhill Drive, Oakland 11, Calif. 1959. 56 pp. $2.

Beaver, Alaska—The Beaver Report: A Community Housing Project. Alaska Development Board, P. O. Box 1532, Juneau, Alaska. 1959. 71 pp.

Brookline, Mass.—Planning for Brookline. Brookline Planning Board, Town Hall, Brookline, Mass. 1960. 48 pp.

Franklin Twp., N. J.—A Comprehensive Plan and Guide for Future Development. Community Planning Associates, P. O. Box 206, West Trenton, N. J. 100 pp. $4.

Hackensack Meadows, Bergen County, N. J.—Financing and Administration, Master Plan Series No. 4. Passaic Valley Citizens Planning Assoc., 312 Clifton Ave., Clifton, N. J. 1959. 210 pp. $7.

High Point, N. C.—A Preliminary Core Study. Planning Department, City Hall, High Point, N. C. 1959. 90 pp.

Marin County, Calif.—Tiburon Peninsula Master Plan. Marin County Planning Commission, 1711 Grand Ave., San Rafael, Calif. 1958. 49 pp.

Massachusetts — Municipal Planning Boards Handbook. Bureau of Government Research, University of Massachusetts, Amherst, Mass. 1959. 48 pp. 24 cents.

Milwaukee, Wis.—Capital Improvement Program 1960-1965. Capital Improvements Committee, City Hall, Milwaukee 2, Wis. 1960. 23 pp.

Minden, La.—Land Use Report. Minden Regional Planning Commission, City Hall, Minden, La. 1958. 42 pp.

Peoria, Woodford & Tazewell Counties, Ill.—A Digest of the Zoning and Subdivision Study. Tri-County Regional Planning Commission, 414 Hamilton Blvd., Peoria, Ill. Undated. 15 pp.

PARKS

Cleveland, Ohio—Report of the Board of Park Commissioners. Cleveland Metropolitan Park District, Standard Bldg., Cleveland 13, Ohio. 1959. 83 pp.

STREETS & HIGHWAYS

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Philadelphia, Pa.—Paving the Way. Division of Public Information, Office of the City Representative, City Hall, Philadelphia, Pa. 1960. 26 pp.

URBAN RENEWAL

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Terre Haute, Ind.—Workable Program for Urban Renewal. Office of the Mayor, City Hall, Terre Haute, Ind. 1959. 27 pp.

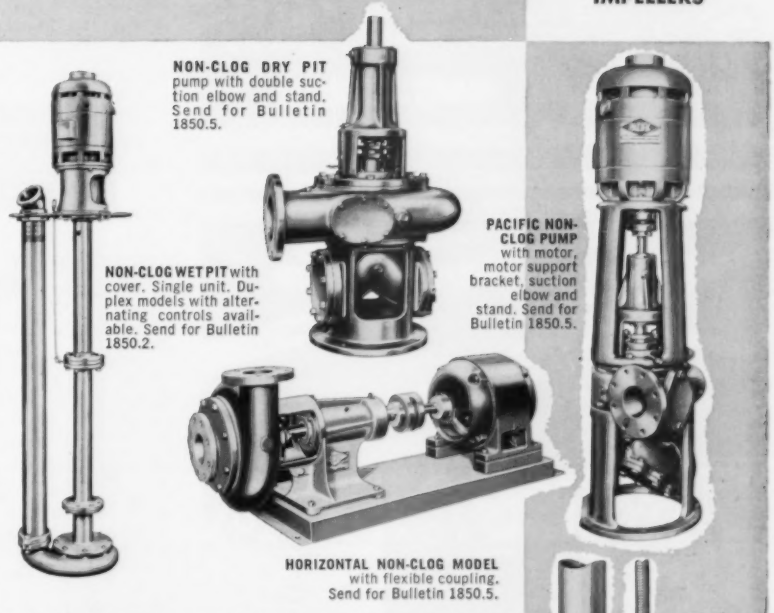
WATER POLLUTION

New York, New Jersey, Connecticut—Interstate Sanitation Commission Report 1959. Interstate Sanitation Commission, 10 Columbus Circle, New York 19, N. Y. 1960. 35 pp.

PACIFIC

A TYPE FOR EVERY SERVICE
RUGGED — DEPENDABLE
NON-CLOG
SEWAGE PUMPS

DRY PIT - WET PIT
SUBMERSIBLE
HORIZONTAL
CHOICE OF IMPELLERS



NON-CLOG DRY PIT pump with double suction elbow and stand. Send for Bulletin 1850.5.

NON-CLOG WET PIT with cover. Single unit. Duplex models with alternating controls available. Send for Bulletin 1850.2.

PACIFIC NON-CLOG PUMP with motor, motor support bracket, suction elbow and stand. Send for Bulletin 1850.5.

HORIZONTAL NON-CLOG MODEL with flexible coupling. Send for Bulletin 1850.5.

Outstanding performance and long trouble-free service from every type. Pacific Non-Clog Sewage Pumps combine all desirable design features that assure efficient, economical and dependable operation and service.

Order now. ALL TYPES AVAILABLE FOR IMMEDIATE SHIPMENT.

SUBMERSIBLE NON-CLOG
A complete unit ready to install includes pump, motor, automatic controls and cable to control panel. Send for Bulletin 1850.5.

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Established 1907
Manufacturers and Distributors of Pumps for Every Service
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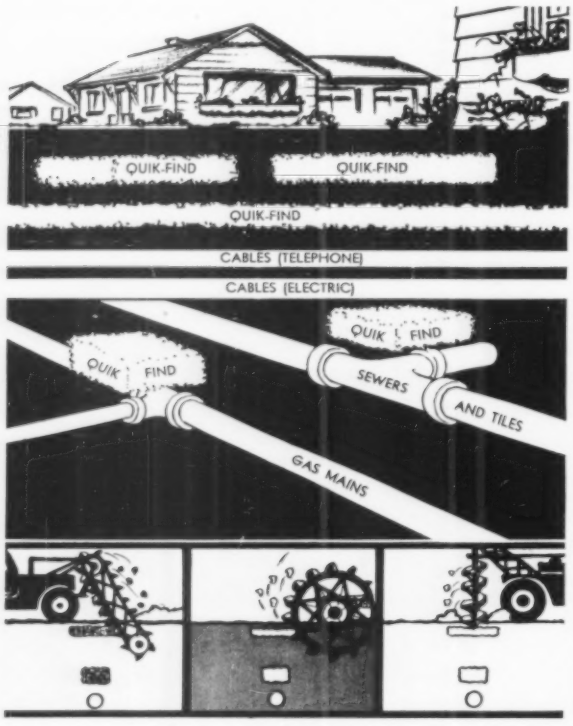
OAKLAND, Calif. · Portland, Ore. · Seattle, Wash. · Los Angeles, Calif. · Dallas, Texas

QUIK-FIND
COLOR
DETECTING SYSTEMS

"The Answer to Everything Buried"

- Permanent-Indestructible Underground Marking
- Eliminates Costly Damage and Breakage of Underground Placements, Fittings, Cables, Sewers, etc.
- Identifies Underground Items and Locations
- Sacked in Dry Form For Easy Application
- Five Colors To Contrast With Any Soil: Red, Yellow, Green, White, Black.

QUIK-FIND is placed about two feet above the actual buried "spot". For example: a tee or wye. A larger QUIK-FIND marking is placed near the surface of the ground level to identify the spot or object below to be located. Each QUIK-FIND marking can be extended as long, as far, or as deep as it seems advisable for the particular purpose.



WHEN BACK HOE OR DIGGING MACHINERY TURNS UP QUIK-FIND COLOR CLOSE TO SURFACE, THE TEE OR WYE IS EXACTLY BELOW. WHEN HOE DIGS DEEPER AND INTERCEPTS LOWER QUIK-FIND COLORED EARTH, THEN HAND TOOLS ARE USED TO FIND CONNECTION WITHOUT BREAKAGE.

Manufactured by

ALLEN, TREMPER & SMITH, INC.

WATERMAN, ILL. — STREATOR, ILL.

ALLEN, TREMPER & SMITH, INC.
Waterman, Illinois

Please send more information on QUIK-FIND.

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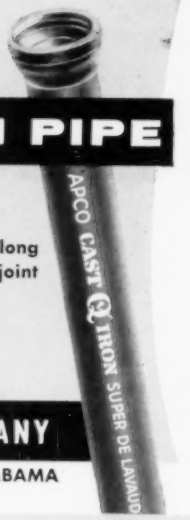
CITY ..... ZONE..... STATE .....

APCO

Super De Lavaud

CAST IRON PIPE



In sizes 3" to 24" in modern long lengths. Bell and spigot, roll-on-joint and mechanical joint.

For water, gas and sewage.

ALABAMA PIPE COMPANY

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ALTITE JOINT®
Patented, U. S. Patent Office

For Efficiency, Economy and Simplicity— *Investigate The New ALTITE JOINT® by APCO*

FASTEST KILLER

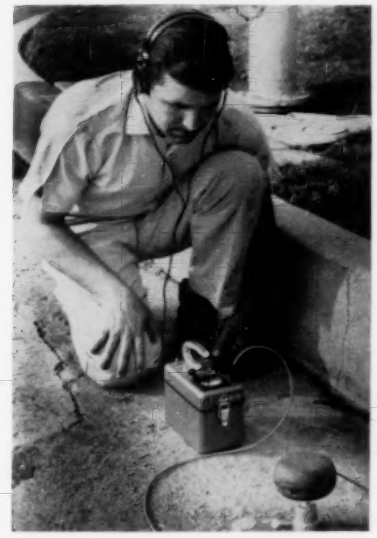
...of Brush and Vegetation Yet!

- **Fast Acting** . . . Kills leaves within 3 to 5 days after spraying.
- **Kills Complete** . . . FENCE FIRE quickly kills leaves and roots.
- **Non Volatile — Non Drifting** . . . new formulation keeps crops safe.
- **Versatile** . . . normal dilution strength safe for grass — double strength will kill grasses.
- **Economical** . . . One gallon of FENCE FIRE makes 100 gallons of spray, yet costs no more than other brush killers that are only half as effective.

Use a Gledhill Roadside Sprayer . . . **to do your own spraying.**

THE GLEDHILL ROAD MACHINERY CO. GALION, OHIO

Detects, Pinpoints Underground Water Leaks



Simple, rapid detection and pinpointing of underground water leaks is assured with the Model L-60 leak detector.

Model L-60 is a new, portable transistorized leak detector designed as a labor-saving device for locating underground water leaks.

Five stages of amplification permits maximum sensitivity to the frequencies peculiar to water leaks. A filter control switch eliminates outside interference.

A single, small battery powers the entire instrument and automatic circuit cut-off is provided while the unit is not in use. A night light and heavy-duty carrying case are standard equipment.

For additional information, write The Goldak Company, Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif., or use the Post Card on Page 56. Circle No. 701.

Traffic Film Available

A 30-minute 16mm color film, complete with sound track by Walt Disney, is being offered at no charge for showing before traffic engineering and highway groups.

It is called "Magic Highways—U.S.A." and traces the growth of the American highway system from 1901 to the present—and projects it into the future. Problems of traffic growth and control are treated and various newly developed devices and techniques presented.

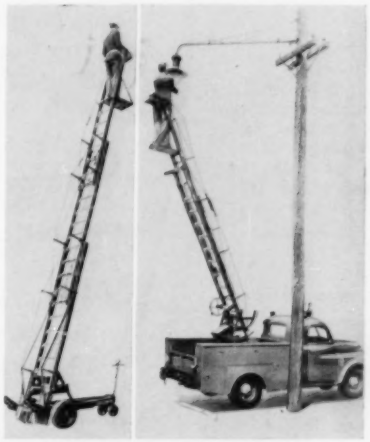
To obtain the film for showing, write well in advance, stating date desired, group to whom it will be shown, and person who will be responsible for receipt and return of the film. Address Hugh Penton, California Metal Enameling Co., 6904 E. Slauson Ave., Los Angeles 22, Calif., or use the Post Card on Page 56. Circle No. 740.

Space Saving Aerial Ladders

In addition to providing desired elevations, Crows'nest aerial ladders permit inclinations to 72° and a full rotational sweep of 360°. They come in lengths of 29′, 32¾′, and 36⅔′ for mounting on trucks, and up to 80′ for in-plant or special use on portable bases.

Municipalities and utilities will find they enable safe, fast, efficient servicing of street lights, traffic signals, police and fire alarm systems, tree trimming, overhead wire inspections and general emergency work. When in-plant use they make possible servicing of lights, sprinkler heads, duct works and other overhead areas with ease and safety.

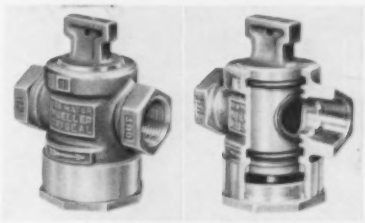
Crows'nest aerial ladders are semi-automatic in operation. This allows full manual control at all times. For complete details, write Industrial Systems Co., 30 Main St., Matawan, N. J., or use the Post Card on Page 56. Circle No. 718.



Flexibility in use is one of the outstanding features of these sturdy, space-saving pedestal-base aerial ladders.

Mueller Introduces New Line of Curb Valves

Oriseal is the name Mueller Co. has given its new line of plug-type valves. The new models feature easier turning, elimination of sticking and freezing of the plug, long



cycle life, freedom from lubrication and periodic maintenance, and no need for mechanical means of seating.

The Oriseal is a sturdy quarter turn valve, particularly suited to curb valve applications. The position of the tee head indicates whether the valve is opened or closed—even though the valve is hidden or inaccessible. The full round-way straight-through port permits rodding and pipe cleaning operations, too.

There are no small parts to twist or break, no stems to bend, no threads to strip.

Three models of the new valve are available. Sizes range from ¾ inch through 2 inches, each with a working pressure rating of 125 psi. For additional information and complete test reports, white Mueller Co., 512 W. Cerro Gordo St., Decatur, Ill., or use the Post Card on Page 56. Circle No. 733.

New Clamp and Gasket Reduce Repair Inventory

A new quick-bolting pipe leak clamp and a new strip-type gridded gasket with metal backing, announced by Smith-Blair, Inc., will permit maintenance departments to make reductions repair clamp inventory.

The new clamp, called a Redi-Clamp, has a specially designed flat lug base that minimizes crush pressure and permits a higher circumferential pull. Redi-Clamps are reported to be faster and easier to

(Continued on page 205)

NEW EXTRA-Duty Mowers by Jacobsen Cut the Cost of Cutting Grass

Ram
High Wheel Rotary

The Ram is exceptionally effective for those hard-to-get-at mowing jobs, rough terrain, ditch banks, or areas cut infrequently. High spoke wheels make it easy to handle, the Jacobsen heavy duty Hi-Torque engine gives it more than ample power. 22-inch or 24-inch cutting widths, free wheeling or power propelled.

Mow-Mobile

Produces remarkably smooth cutting, even on roughest terrain. Flexible cutting head with multiple discs permit clean cutting in heavy growth, over the roughest terrain. Two models: 34-inch and 37-inch cutting widths, heavy duty engines. May be equipped with electric starter-generator set, walking handle, front skids, leaf mulcher, snow blade. Send coupon for bulletin.

Jacobsen

MANUFACTURING COMPANY · RACINE, WISCONSIN

JACOBSEN POWER LAWN TOOLS

Jacobsen Manufacturing Company,
Dept. AC6 • Racine, Wisconsin

Please send me the following:

☐ Complete literature on Jacobsen Powers Mowers.

☐ Arrange a demonstration—no obligation.

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Address _____

City _____ Zone ____ State ____

Attach to official letterhead and mail.

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Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

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Fast Colors
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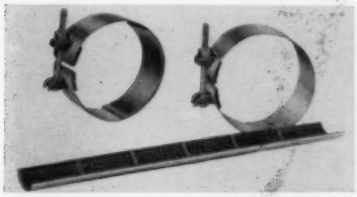
FRANKLIN WORSTED COMPANY

40 East 34th St., New York 16, N. Y.



One clamp width and a gasket strip can be used to make repairs of any length in multiples of 3 inches.

(Continued from page 203)

install than conventional removable bolt clamps as the bolt remains in one lug and is snapped over the open slots of the opposite lug. These can be stocked in 3-inch band widths only, yet can be used to make clamps in any multiple of 3-inch length up to 30 inches.

The new gasket, called Sta-Grid, is made of ⅛-inch gridded neoprene and is vulcanized to a 26-gauge stainless steel backing in the molding operation. Lengths supplied are 18 inches by 3-inch and 1¼ inch widths. These are preformed.

For additional information, write SMITH-BLAIR, INC., 535 RAILROAD AVE., SOUTH SAN FRANCISCO, CALIF., or use the Post Card on Page 56. Circle No. 720.

New Line of Fire Trucks

A new line of pumpers—the Premium Custom—is announced by Ward LaFrance Truck Corp., Elmira Heights, N. Y. It permits a customer the choice of 16 different models, the basic model incorporating several exclusive Ward LaFrance features.

An all-steel roof, for example, converts an open cab into a weatherproof, closed cab in minutes. It's called the Add-A-Top. The cab seats seven men. And the model's cab-over engine design places the power plant ahead of the front axle for greater safety, visibility and maneuverability.

While the tank itself is removable (and available in 350, 500, 750 and 1000 gallon sizes), three light, easily-removed covers make spot inspections easy. Tank interiors are coated with zincolate. Hose body capacity with a 350-gallon tank is 1800 feet of 2½-inch hose and easily removable.

Chassis dimensions are the shortest; turning radius, 24 feet; front overhand, 56 inches; wheelbase, 150 inches; length, 288 inches; and overall turning radius, less than 27 feet. For additional information, write WARD LAFRANCE TRUCK CORP., ELMIRA HEIGHTS, N. Y., or use the Post Card on Page 56. Circle No. 706.

Unified Under-Street Boring Machine

Young Engine Corp.'s new under-street boring machine is now being made with a 35-hp power unit mounted directly above the boring unit. This is designed to save setting up time, to provide more efficient and trouble-free power transmission, and to give the operator unobstructed vision and full control of boring operation from all sides.

Operating on the rotary drilling principle, this machine bores and installs, in one operation, casing 6 inches to 30 inches in diameter, and in limited lengths 36-inch diameter casings. It is made to bore through sand, gravel, clay, slate, concrete, timbers, and rocky formations. Cut-

(Continued on page 206)

Wonderlift

The *Wonderlift Trailer* is the fastest, safest and easiest method of loading and transporting sweepers and other equipment then unloading to either ground or dock level.

Proven over 15 years by thousands of satisfied users.

Write for details today!

SELMA TRAILER
and Manufacturing Company
P. O. Box 120AC, Selma, California

Re-new your structures with GUNITE!

durability
★ economy
★ flexibility

- DAMS
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- SEWERS
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estimates, specifications and surveys made free of cost to you. write, wire or call MElrose 4-8120

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ENGINEERING—CONSTRUCTION
Contracts Taken Anywhere
226 N. Alabama St. ● Indianapolis, Ind.

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Gentlemen: Please have a representative contact me. I am interested in:
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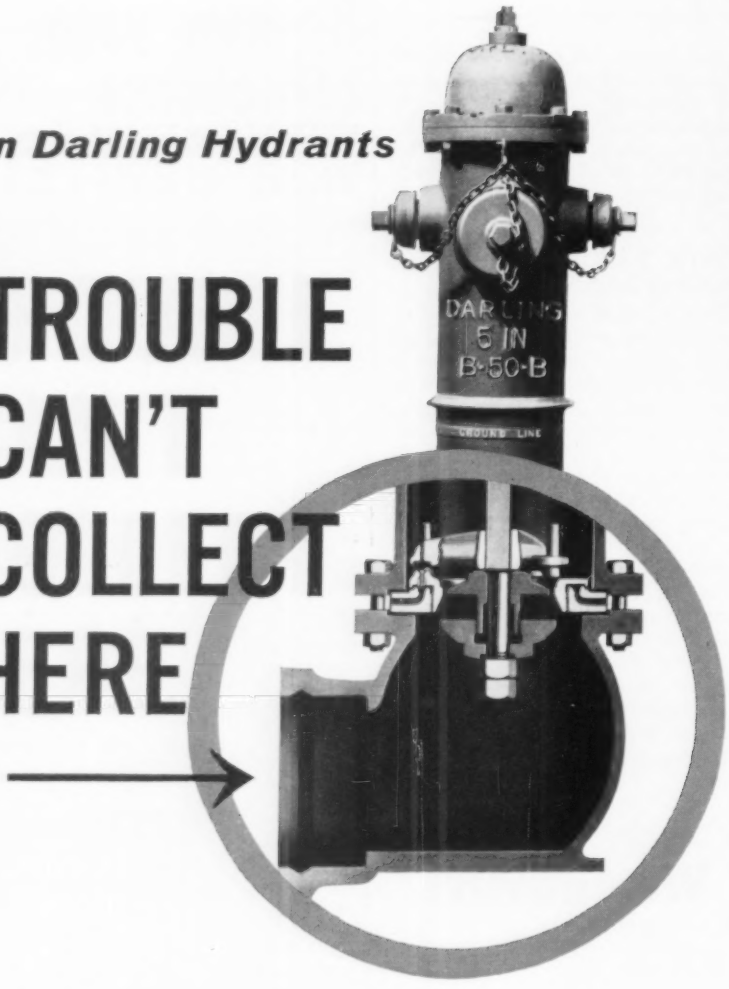
In Darling Hydrants

TROUBLE CAN'T COLLECT HERE



EVER SINCE modern fire hydrants were invented, designers have aimed, with more or less success, at positive, complete water drainage to prevent freeze-ups, corrosion and binding. And this is another successful feature of major importance in the design of Darling hydrants. Consider...

1 An unmatched safety factor is assured by automatically operated, compression type drain valves and unique triple-porting in the main valve seat!

2 For an interval during each opening or closing of the main valve, the drain ports are automatically force-flushed by line pressure to remove any sediment. And, when the main valve is closed, these ports remain fully open to assure the release of all remaining water.

3 The water drains from the barrel through 3 ports into the bronze drain ring which has 10 to 18 ports to allow water to escape into the ground and eliminate all possibility of clogged drains.

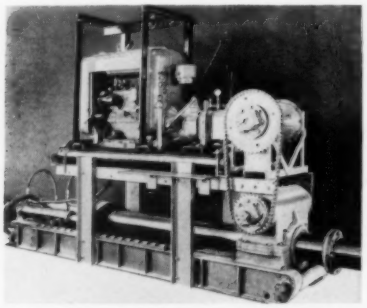
This and other equally important Darling design features are your assurance of the smoothest, surest, safest hydrant operation known today. For all details, including the range of types and sizes, ask for Bulletin 5710.

DARLING VALVE & MANUFACTURING CO.
Williamsport 10, Pa.

TRADE DARLING MARK

Manufactured in Canada by
The Canada Valve & Hydrant Co., Ltd., Brantford 7, Ont.

Purchasing



This improved boring machine speeds and makes more economical the installation of pipe under streets.

terhead breaks up cuttings from the boring operation, and cuttings are washed from the inside of the casing with water, which also helps to lubricate the pipe on the outside so it turns freely.

For complete information, write YOUNG ENGINE CORP., CANTON, OHIO, or use the Post Card on Page 56. Circle No. 714.

Battery for Golf Carts

A new storage battery is about to help electric golf carts break par for performance and economy. It is the Exide Golfer-48, which delivers 9% to 30% more electrical energy than any other battery used in golf carts.

The Golfer-48 is said to be the first battery designed so specifically for the long power-drain service that electric golf buggies demand. It has a predicted minimum life of four years, four times that of automotive-type batteries generally used.

For further information, write EXIDE INDUSTRIAL DIVISION, THE ELECTRIC STORAGE BATTERY CO., RISING SUN AND ADAMS AVE., PHILADELPHIA 20, PA., or use the Post Card on Page 56. Circle No. 719.

New 4-6 Ton Roller

General Engines Co., Inc. announces production of a new 4-6 ton tandem roller—The General.

It is designed to work within ¾-inch of building and foundation lines, has extra high clearance of curbs and a turning radius of 14½ feet. Finger-tip control power steering, hydraulic brakes and simple forward and reverse transmission are other features.

For complete information, write General Engines Co., U. S. Route 130, Thorofare, N. J., or use the Post Card on Page 56. Circle No. 729.

Service Utility Bodies for Light-Duty Trucks

This International Model B-100 truck, equipped with a new 89-inch long service-utility body, has an unobstructed interior width of 48½ inches in the body. Seven new service-utility bodies have been introduced for International light-duty trucks. All feature greater body strength and improved styling. Lengths range from 79 inches to 100 inches. Both open and fully-enclosed models are offered. For details, write Consumer Relations Dept., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Post Card on Page 56. Circle No. 723.

Self-Dumping Trash Rake

Water and sewage works and power plants will make good use of this new log grapple trash rack rake to free water intakes of water-borne rubbish. *(Continued on page 209)*

CUT CLEAN WITH CLEAN-CUT!

Clean-Cut 72 Mows at 8 MPH

Cut Grounds Mowing Time in Half!

Get a clean, even mowing job from Clean-Cut's "floating" mower units. Mowers are so maneuverable you make 90 or 180-degree turns at top speed — within the length of the Tractor.

Three riding mowers available — the Clean-Cut 72, 36 and 24 — A Clean-Cut Mower to fit *your* needs!

Clean-Cut 24 or 36

Free Literature — Demonstration!

Write today for colorful FREE "Mowing Magic" folder giving full details about Clean-Cut Mowers. Ask about a FREE Demonstration.

CLEAN-CUT MOWERS INC.
P.O.BOX 701-F DUNBAR, W. VA.

TARCO *"Litter-Getters"*

Vacuum-type LEAF and Litter Collectors

These are powerful vacuum-type machines designed for **rapid collection** of **Leaves** or **Litter** such as: newspapers, paper cups and wrappings, tin cans, pop bottles, ticket stubs, etc. Discharge material into truck mounted box.

All Tarco "Litter-Getters" are equipped with large, popular, **air-cooled, electric starting engine**; heavy reinforced and perfectly **balanced steel suction impeller**; replaceable **stainless steel liners** for suction housing and exhaust duct. Model L. G., **Straight Trailer Mounting**, shown here is **quickly changed from right to left side pickup.**

Several Other Models. Model L. G., **Cross Trailer Mounting**, is equipped with wide semi-rigid suction snout for windrow collection of leaves. Model L. G., **Skid Mounting**, is designed for mounting on a dump truck body or stake body ahead of the receiving box.

See your TARCO Dealer or write us for details.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N. Y.

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Offering a background of a quarter century of

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THIS PICTURE SHOWS WHAT WEED OUT TREATED AREA LOOKS LIKE AFTER 2 YEARS

Note the abrupt Weed line at the gate

Ask for our 1960 52 page Brochure

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Manufactured Exclusively by

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No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is *best* for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

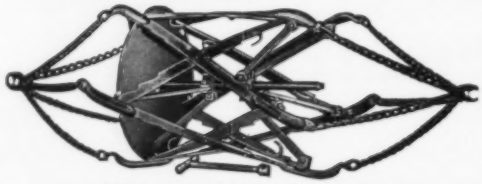
DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

EXPANDING ROOT CUTTER SEWER CLEANER



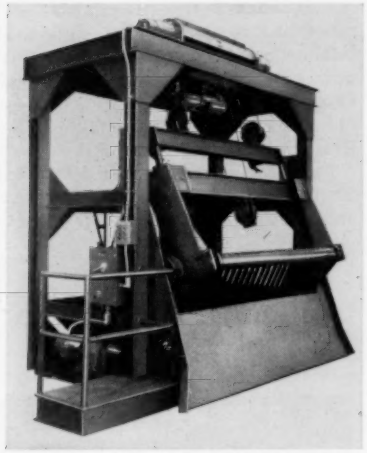
Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and cake sediment like this.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.



Self-dumping trash rake with teeth retracted.

(Continued from page 207)

When descending, its teeth retract with sufficient space between the rack bars and the teeth on the basket to clear the accumulated trash against the bars. When ascending, the rake's teeth engage the rack bars to clean the trash which is dumped into a car that is carried along the hoist car.

The rake is available in several models in 6 to 12-foot sizes and in 2-foot increments. For additional information, write ALLIS-CHALMERS MFG. CO., YORK WORKS, YORK, PA., or use the Post Card on Page 56. Circle No. 726.

New Electric Plant

Kohler Co. announces a new 50kw electric plant available in various models for gasoline or gas-gasoline operation, for radiator cooling or city water cooling, and for any standard voltage desired.

The new unit has a revolving field, 12-lead reconnectible generator designed to crank electrically through the direct-connected exciter. An automatic voltage regulator is standard equipment.

The generator is Kohler-designed and Kohler-built, and the gasoline engine powering it develops 104 horsepower at rated speed of 1800 rpm. Applications include stand-by

(Continued on page 210)

WHEELER PIPE CUTTERS

No Vise **No Turning — Just Squeeze and Pop!**

The Wheeler family of pipe cutters can answer your pipe cutting problems for a wide range of sizes and materials (see chart).

A - (MANUAL CUTTER)

B - (JR. HYDRAULIC)

C - (HEAVY-DUTY HYDRAULIC)

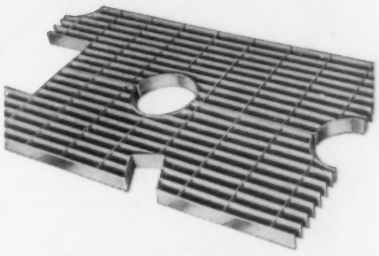
TYPE OF PIPE	2"	3"	4"	5"	6"	8"	10"	12"	14"	15"	16"	18"	
Std. Cast Iron Soil	AB	AB	AB	AB	ABC	BC	C	C	C	C	C	C	
XH Cast Iron Soil	AB	AB	AB	AB	ABC	BC	C	C	C	C	C	C	
Tile (all types)	AB	AB	AB	AB	AB	AB	AB	AB	ABC	ABC	C	C	C thru 36"
Concrete	AB	AB	AB	AB	AB	BC	C	C	C	C	C	C	C thru 24"
Corrosion Resistant	AB	AB	AB	AB	AB	BC	C	C					
Asbestos Cement Sewer-Vent-Conduit	AB	AB	AB	AB	AB	AB	C	C	C				
Asbestos Cement Pressure Pipe	AB	AB	AB	AB	AB	ABC	C	C	C	C	C		
Std. and Cement Lined Cast Iron AWWA 150	B	B	C	C	C	C	C	C	C	C	C	C	
Std. and Cement Lined Cast Iron AWWA 250	B		C	C	C	C	C	CD					
Rd. or Square Flue Liner			AB	AB	AB	AB	AB	AB	AB				

Each cutter requires optional extra chain for some larger sizes.

THE WHEELER MANUFACTURING CORP.

P. O. Box 688 Ashtabula, Ohio

SOLVE YOUR GRATING PUZZLE



Every shipment of IRVICO grating is carefully checked and inspected to see that cutouts and sizes of panels are exactly in accordance with approved drawings.

When the job is delivered to you, the panels will fit into place easily and quickly, even where the application must be made like a jig-saw puzzle.

For more than half a century, the name Irving has meant grating fabrication under the rigid discipline of quality standards. Every job is treated individually, with considerable attention given to exact fit.

specify IRVICO

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"A FITTING GRATING for EVERY PURPOSE!"

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PRESSURE-LOCKED

in steel, aluminum and other metals.

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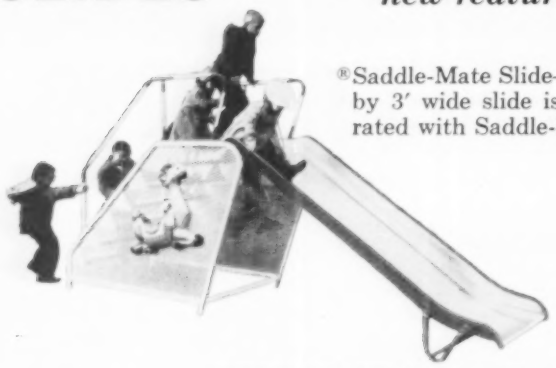
1830 10th St., Oakland 20, California

SLIDES *with attractive, new features*



®Saddle-Mate Slide—Tot size 4′ high by 3′ wide slide is colorfully decorated with Saddle-Mate medallions.

HEAVY-DUTY SLIDES WITH SAFETY PLATFORMS – All-steel slides, with exclusive one-piece formed chutes and all-welded construction. Comes with stainless steel or galvanized chutes. Enclosed safety platform and speed reducing end are typical of many safety features. Sizes: 4′ high (8′ chute) –6′ (12′ chute)–8′ (16′ chute). Portable or permanent installation.

MAINLINER SLIDES – Low-priced, economy version – offer most of quality features above, except for safety platform and different finishes. Same material styles and sizes, permanent or portable.

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Opposite Greater Pittsburgh Airport on beautiful Airport Parkway West. 56 luxurious air-conditioned rooms with tile bath, TV, private phone. Courtesy car to and from airport.

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*Teletype Service. For immediate confirmation of reservations at no charge . . telephone any Knott Hotel—or teletype PG-29.

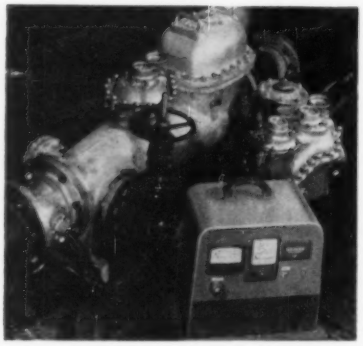
Purchasing

(Continued from page 209)

power installations for hospitals and public buildings, sole source of power for construction projects and workboats; and, when trailer-mounted, a mobile power supply for Civil Defense organizations.

For details, write KOHLER CO. of KOHLER, WIS., or use the Post Card on Page 56. Circle No. 727.

Ultrasonic Flow Meter for Water and Sewage Use



A new ultrasonic flowmeter employing high-intensity sound waves, transmitted through the walls of the pipe to a flowing liquid in order to measure quantity and rate of flow, has been developed by the Hersey-Sparling Meter Co. and Gulton Industries, Inc. It is expected to resolve problems of field-testing present large water meters and checking flow in pipe line and fire protection systems already in service.

The Gulton flowmeter principle sends an ultrasonic beam across the stream and measures the shift of the beam under the influence of the flowing liquid. The sound from the transmitting device—called a transducer—echoes back and forth inside the pipe. Because of the shift of the beam, only a fraction of it is picked up by a sonic detector in the opposite wall of the pipe. The detector produces a small voltage which can be amplified and read on the voltmeter and which varies with the velocity of flow in the pipeline. Circuits are designed to modify this voltage according to the density of the liquid so that the output to a recorder measures the rate of volumetric mass flow.

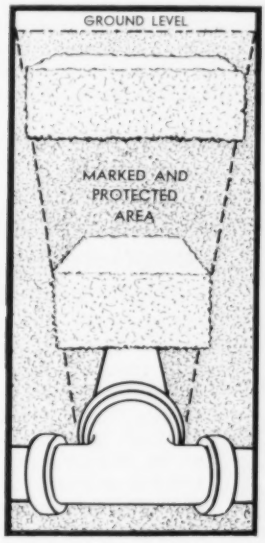
The flow meter is hooked up to remote control readout devices that show both rate of flow and total

flow at any given moment. The ultrasonic devices are packaged in bronze or stainless steel pipe sections of standard diameters that can be inserted in any pipeline.

For further information, write GULTON INDUSTRIES, INC., 212 DURHAM AVE., METUCHEN, N. J., or HERSEY-SPARLING METER CO., 250 ELM ST., DEDHAM, MASS., or use the Post Card on Page 56. Circle No. 731.

Warns of Buried Pipe

An underground color detecting system has been developed by Allen, Tremper & Smith, Inc., to eliminate costly breakage and damage of underground cables, water and sewer lines, etc., by heavy, fast-moving excavating machinery. It is called Quik-Find and comes packaged as a dry powder in five colors



to contrast with various shades of soil. It is said to be permanent and indestructible.

When used in the string-a-long system, Quik-Find color is strung out over cables or pipe for any distance where such pipe may cross or intercept other sewers or utilities that may be ripped up. In the spot system it is used to identify the specific location of a single fitting, such as a wye or tee.

In actual application, Quik-Find is placed about two feet above the buried object. Then a larger Quik-Find marking is placed near the surface of the ground level to identify the spot or object below to be located in the future. When Quik-Find is used near ground level it can be located either by pot-holing or excavating machinery and when the marking is turned up it identifies the exact spot of the buried object below. At this point, the excavating machines can be stopped and crews can proceed with hand tools to uncover the object.

For further information, write ALLEN, TREMPER & SMITH, INC., WATERMAN, ILL., or use the Post Card on Page 56. Circle No. 736.

Hydraulic Pipe Cutter

This new addition to the Wheeler pipe cutter line is designed to handle up to 8 inch standard and extra-heavy soil pipe, as well as 2-inch and 3-inch cast iron water main.

It is reported to be ideal for use in close quarters and on over-head installations. The heavy-duty hydraulic pump may be easily and

(Continued on page 212)

Still Another New Buffalo Turbine For 1960

MODEL FST-2

USE YOUR VERSATILE BUFFALO TURBINE EQUIPMENT FOR

* Shade Trees
* Mosquito Control
* Fire Retardants
* Seeding
* Soil Stabilization
* Broadcasting
* Fly Control

Be ready to do any big job with the new MODEL FST-2. These features make it the finest on the market for spraying and/or mist dusting. • a 200 gallon stainless steel tank • up to 10 gallons per minute at 400 pounds pressure • the turbine is made of strong cast aluminum providing a very compact and effective fan. When operated at 4200 RPM it provides approximately 14,000 CFM of high velocity "Turbulent Air". • dust bin has vertical screw feed forcing dust into air stream, mechanical agitation in bin, rate of feed is adjustable to quantity desired.

Several valuable territories open. Dealers write for details.

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AGRICULTURAL EQUIPMENT CO., INC.
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Your back door service routes can be shortened

ONE HOUR A DAY

when your crews use the

CARRY-BARREL

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Over a thousand private and municipal refuse organizations are now using Carry-Barrels. If your city is still using cartons or metal tubs and pails, your collection time can be reduced 15 or 20 per cent.

- 50 GALLONS Handles maximum carryable load of combined refuse. Collects four houses on light day in twice-a-week collection with one back yard trip.
- 7 POUNDS LIGHT Less fatigue.
- LONG LIFE Hundreds of one-year-old barrels are still in use.
- WATERPROOF No more wet shoulders
- WIDE MOUTH Instant filling and dumping without compaction or spills.

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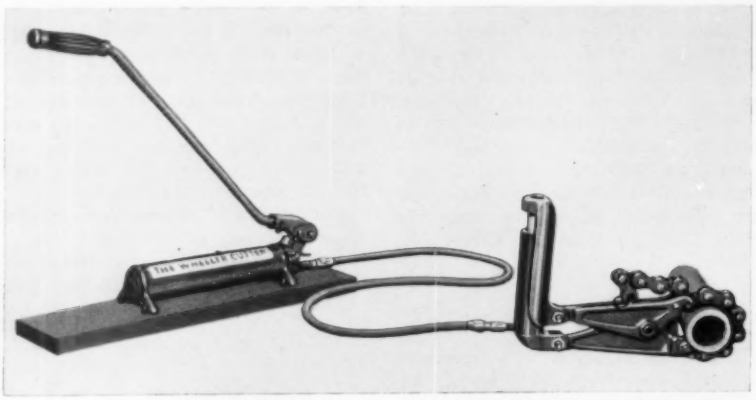
Purchasing News



The Wheeler Jr. hydraulic pipe cutter.

(Continued from page 211)

safely operated remotely from the actual cutting location.

The complete hydraulic assembly may be readily substituted for the handles of the company's manual cutter to convert to hydraulic power. Write WHEELER MFG. CORP., ASHTABULA, OHIO, or use the Post Card on Page 56. Circle No. 713.

New Traffic Striper Uses Felt Applicator

A completely new, moderately priced machine paints straight lines, circles and curves for the traffic lanes of parking lots, metered parking areas, street crosswalks, tennis courts, gymnasiums and the grass turf of athletic fields—and it does

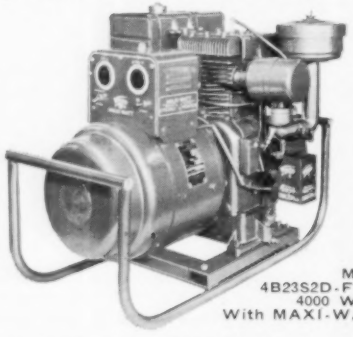
WINCO® Portable Electric Power for Every MUNICIPAL NEED!

ONLY WINCO® has ALL THESE FEATURES

MAXI-WATT MAXIMUM EFFICIENCY MAXIMUM POWER

WINCO® (115V) FULL POWER 230V

Automatic CONSERV® IDLING CONTROL Extends Engine Life Reduces Fuel Consumption Lowers Maintenance Cost



Model 4B23S2D-FM9C 4000 Watts With MAXI-WATT

EXTRA POWER! EXTRA PERFORMANCE! EXTRA VALUE!

For portable electric power at its best, get the interesting facts on the NEW WINCO Models with their Exclusive Features. 1500 to 10,000 Watts.

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Subsidiary of Zenith Radio Corporation
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WINCHARGER CORPORATION
SIOUX CITY 2, IOWA Dept. AC66
Please rush to me Details of WINCO MAXI-WATT MODELS.
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Dept. .....
City ..... State.....

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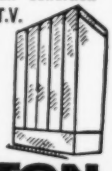
* During certain convention periods, all available Chicago hotel rooms are frequently taken. The Hamilton guarantees (with advance notice) reservations anytime of the year to you, the preferred guest. Ask for your "Preferred Guest Card", today . . . at no obligation. Free year 'round air conditioning, radio & T.V.



Rates from $5

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20 SOUTH DEARBORN
Preferred by guests in
CHICAGO
IN KANSAS CITY IT'S THE BELLERIVE HOTEL
100% AIR-CONDITIONED

it with a felt paint applicator instead of a spraying application.

It is a friction-drive, noiseless machine requiring neither gasoline nor electric motor, and it has no valves or nozzles that can become clogged. It's constructed of steel and aluminum and weighs approximately 35 pounds.

Interchangeable optional equipment includes 1, 2, 2¼, 3 and 4-inch width striping rollers, 3-inch diameter rear swivel casters, and 8-inch diameter rigid rear wheels, which facilitate movement of the machine in large areas.

For details on the Dearborn Paint Striper, write R. E. MUNCEY, INC., P. O. Box 387, BIRMINGHAM, MICH., or use the Post Card on Page 56. Circle No. 705.

Time Clocks for Parking Lots

A new unit calculates and prints the charge as well as printing the time "in" and "out" of parking lots.

The parking ticket is automatically time-stamped by the attendant when the car is parked. When the customer asks for his car, the ticket is stamped in a second unit. In red ink, this prints the exact charges and time "out" in hour and minute. Besides eliminating customer complaints, the two desk size units banish attendant mistakes and speed auditing of parking tickets for the owner.

Parking lots with separate entrances and exits can install the

(Continued on page 214)

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector

"Dualtronic"

Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.

The GOLDAK Company, Inc.
Leading Electronic Manufacturers Since 1933
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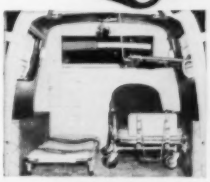
WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

Siebert

• RESCUE SQUAD CARS
• FIRST AID CARS
• AMBULANCES

Low Cost UTILITY AMBULANCE



Custom-Built on FORD ½ ton Panel Delivery Truck

Siebert designs and builds custom-body automotive units to provide greatest facilities in use. Convenient compartments for linens, blankets, oxygen and mask equipment, resuscitator, medicine, radio, fracture boards, and crash tools are a part of Siebert units, whenever desired. Let us work with you on your requirements—one or a fleet.

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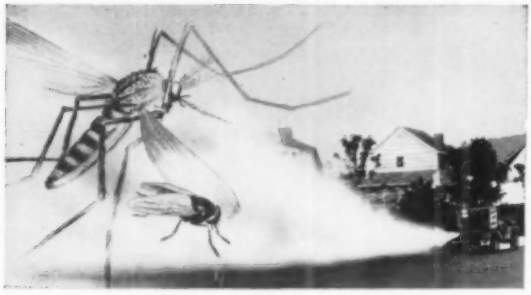

MOSQUITOES
FLIES
AND OTHER
INSECT PESTS
DESTROYED ON CONTACT

TIFA

TODD INSECTICIDAL FOG APPLICATOR
Available for Operation on Propane or Gasoline

Lowest-Cost Space Control throughout the community. Peak performance against all insect pests . . . on the dump, over pools, in suburbs, play areas, everywhere insects swarm. Best by test for over 15 years, TIFA sets the records for lowest operating and maintenance costs in 5000 communities throughout the world. True clean fog with maximum efficiency, using newest or older type insecticides (solution, emulsion, suspension) . . . one man operation. **New Starter-Generator (Optional) for immediate starts, easily attached to new and existing TIFA units.**

Listed by Underwriters' Laboratories, Chicago
Write for illustrated folder with details and official comments.

TODD SHIPYARDS CORPORATION
PRODUCTS DIVISION

Sales and Service Departments: Columbia and Halleck Streets, Brooklyn 31, N. Y.
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For more permanent street repairs use Patchmobile

MODEL PM-430
PATCHMOBILE
PORTABLE HOT ASPHALT PLANT

The only all-in-one self-contained asphalt maintenance machine with rotary dryer, pugmill driven through enclosed gearbox, 250 gallon asphalt tank, automatic asphalt metering system and low-pressure burners. You can make better street repairs all through the year with this COMPLETE plant at no extra cost.

Wylie Asphalt Equipment

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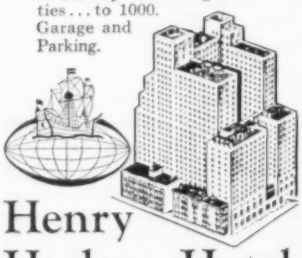

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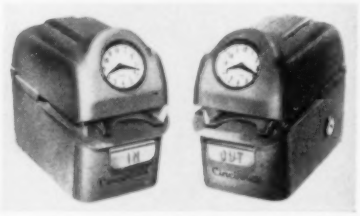
NEW YORK CITY

Purchasing



(Continued from page 213)

"in" timer at the entrance and the calculating "out" timer at the exit. Installation requires only a 110-volt a. c. outlet.

Detailed information on the new "Tym'n Rater" may be obtained from CINCINNATI TIME RECORDER CO., 1733 CENTRAL AVE., CINCINNATI 14, OHIO, or use the Post Card on Page 56. Circle No. 734.

Latest in Computers

A computer capable of reading a conventional business document is demonstrated by operator Belinda Pope of the National Cash Register Company for Robert S. Oelman (left), president, and Stanley C. Allyn, board chairman. The computer, which in a day can prepare payroll records for 1,000 employees, was shown to the press in New York City May 3. For additional information, write NATIONAL CASH REGISTER CO., DAYTON, OHIO, or use the Post Card on Page 56. Circle No. 703.

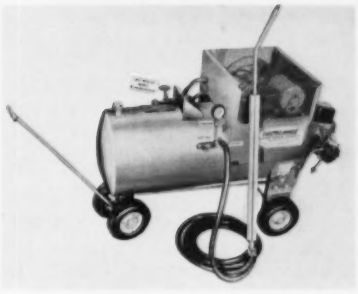
Steam-Cleaner Attachment Gives Hot Water Rinse

A hot water rinse attachment now standard equipment on the Electro-Magic motor steam cleaner, allows the operator to rinse or flush by turning a valve and can be used to clean the coils of the steam

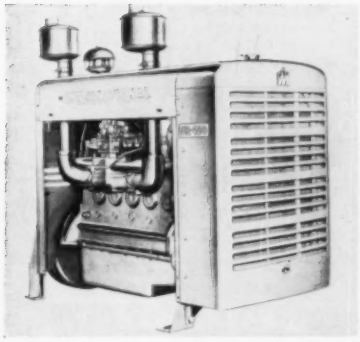
cleaner itself of solvents and other solutions.

The steam-cleaner also features push-button controls as standard equipment. Electro-Magic models will supply up to 100 pounds of steam pressure in 90 seconds.

For additional information, write H. J. JENSEN, VICE PRESIDENT, ELECTRONICS, INC., VERMILLION, S. D., or use the Post Card on Page 56. Circle No. 739.



New International Engines



This is the UR-450, one of three new 6-cylinder carbureted engines introduced by International Harvester Co. The other newcomers are the UR-372 and UR-501.

All three feature downdraft carburetion with velocity governor and have higher horsepower ratings than the current International models of the same displacement—U-372, U-450 and U-501 (these engines have updraft carburetion with a gear-driven mechanical governor).

(Continued on page 216)

FORM 110
LUMINAIRE ADAPTER

CONVERTS TO TWIST LOCK IN LESS THAN A MINUTE

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Air Pollution Control

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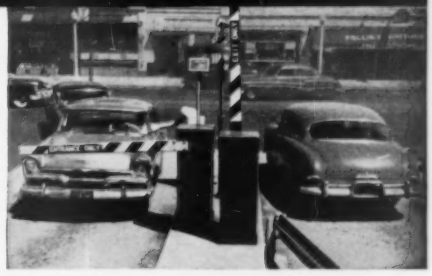
Automation Parking Pays Big Revenues

WESTERN AUTOMATED PARKING GATES



Eliminate Labor Costs—Easy to Operate

Municipalities and parking operators find that Automation Parking with Western Gates pays big revenues. It results from low installation costs, practically no maintenance costs, and no labor costs—the biggest cost of parking lot operation. And it's a simple matter to make periodic collections at one or two coin boxes.

This is the answer to off-the-street parking problems. Western Gates operate with Remote Controls, using coins, tokens, Parkards, keys, or any combination of these methods. Western Gates are safe, function in all types of weather, and are built to last 20 to 30 years.

Send for free 40-page manual containing descriptions and illustrations of parking lot plans.

MADE BY THE BUILDER OF 15,000 RAILROAD-HIGHWAY CROSSING GATES

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PLAYGROUND DEVICE CO.

ANDERSON, INDIANA, U.S.A.

WORLD'S LARGEST MANUFACTURERS OF FINE PARK, PICNIC, PLAYGROUND, SWIMMING POOL AND DRESSING ROOM EQUIPMENT

Faster LOCATING!

•LOWER SERVICE COSTS•

with the improved AQUA VALVE BOX LOCATOR!

STOCK this useful tool for every service CAR and CALL •

Speed • Locating • Keep Customers Happy

- NO WIRES, BATTERIES or SWITCHES—simple, powerful magnetic action, factory adjusted to YOUR geographical location assures unfailing results!
- NO NEEDLE SPINNING—exclusive electric braking action saves you time!
- NO STOOPING—easy top-view reading!
- RUGGED—compact, accurate, convenient!
- GUARANTEED—to function regardless of weather, surface or ground cover!
- NATION'S MOST WIDELY USED LOCATOR!
- 15-DAY FREE TRIAL—No money! No obligation! You be the judge!

ORDER NOW-Wire or Call Klrby 1-4200 collect

AQUA SURVEY & INSTRUMENT CO.

824A North Bend Rd., Cincinnati 24, Ohio

Purchasing

(Continued from page 215)

The newest power plants have maximum power ratings of 165 hp at 3,200 rpm for the UR-372; 182 hp at 3,000 rpm for the UR-450 and 212 hp at 3,000 rpm for the UR-501. All models are available with natural gas and LPG attachments.

For additional information, write CONSUMER RELATIONS DEPT., INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL., or use the Post Card on Page 56. Circle No. 710.

Rechargeable Flashlight Cartridge

A workman slips Sonotone's rechargeable battery cartridge in his flashlight for three hours of reliable light in a 16-hour charge. It is recharged (see insert) by unscrewing the cap and inserting the prongs in any 110-volt AC outlet. For further information, write SONOTONE CORP., ELMSFORD, N. Y., or use the Post Card on Page 56. Circle No. 725.

Purchasing News Briefs

• the newly formed OMC Engines and Equipment Division of **Outboard Marine Corp.**, with headquarters at 500 Pershing Rd., Waukegan, Ill., will consolidate sales, advertising and service functions of Lawn-Boy Power Mowers and Tillers, OMC Engines, Pioneer Chain Saws and new products.

• a proposed merger of **Barber-Greene Co.**, Aurora, Ill., and Smith Engineering Works, Milwaukee, Wis., has been approved by the board of directors of each company. Under the plan, the merged company will operate under the

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Overlooking Lake Michigan and Belmont Yacht Harbor. 12 minutes from the loop—direct busses at the door. Spacious parking. New Banquet and Meeting rooms accommodate up to 400 persons. Charming, new Mansion House Dining Room and unique Cocktail Room—The Dam Site.

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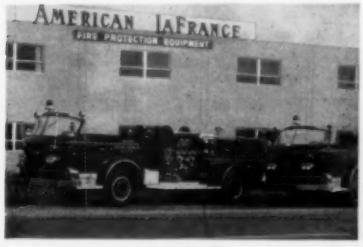
Purchasing

name of Barber-Greene Co., under its present officers, with the addition of Gerald L. Smith and Donald D. Barnes as vice presidents and members of the board of directors. Smith Engineering Works will operate under its present management as a division of Barber-Greene. Gerald L. Smith will become president and Donald D. Barnes will become vice president of Smith Engineering Works Division.

Barber-Greene manufactures asphalt mixing, paving, ditching, and materials handling equipment. Smith produces the Telsmith line, which includes crushing and screening equipment.

• two new distributors named by Mobil Sweeper division of **The Conveyor Co.**, Los Angeles 58, Calif. to handle the Mobil Sweeper line of pick up street sweepers are Gar-Wood-Detroit Truck Equipment, Inc., 21083 Mound Rd., Warren, Mich., to distribute in Michigan (except for the Upper Peninsula) and Boehle Construction Equipment, Inc., 2404 W. Clyburne, Milwaukee, Wis., to distribute in the state of Wisconsin and in the Michigan Upper Peninsula.

• one subject of discussion at the recent annual meeting of the **National Clay Pipe Manufacturers, Inc.**, was the association's expanded research program, being conducted at Crystal Lake, Ill., under the direction of A. J. Reid. Among developments pioneered at the research center is a new type joint for vitrified clay pipe which cuts installation time and cost. G. A. Robinson, NCPMI president, reports the research program may soon pave the way for less expensive and more efficient sewage disposal systems.

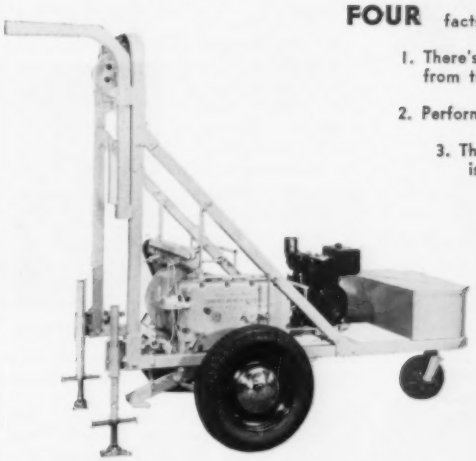


The new San Francisco District Office of American LaFrance is in suburban Burlingame on the Bayshore Highway at 868 Burlway Road, less than a mile from the San Francisco International Airport.

TURCO

MAXI-POWER Sewer Cleaning Unit

Note the STIFF LEGS—quickly adjustable to compensate for uneven ground.



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TWO machines, located at the ends of the sewer section to be cleaned.

TWO models (501 and 502) each with 3-speed transmission, enable you to get the exact power and line speed you need:

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#501	11000 lbs.	9000 lbs.	7000 lbs.
#502	15000 lbs.	12000 lbs.	9000 lbs.

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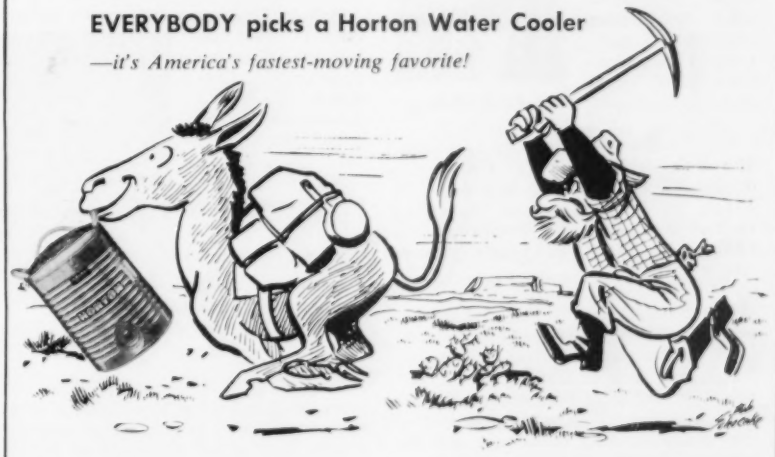

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ABOUT PEOPLE

Member manufacturers of the **Clay Sewer Pipe Association,** Columbus, Ohio, have re-elected A. G. Cochran of Columbus, president. Hudson Hillyer of the Clay City Pipe Co., Uhrichsville, Ohio, was named vice president; and Mrs. Reva D. Smart of Columbus was re-elected secretary-treasurer.

A. G. Cochran

Randal L. Garten joins **Municipal Service Co.,** Kansas City, Mo., developer of the new "SUBURBIA" sewage treatment plant, as sanitary engineer.

Stanley E. Wolkenheim has been appointed vice president, marketing of **Fairbanks, Morse Co.,** Chicago 5, Ill., according to an announcement by Robert W. Kerr, F-M president.

J. K. "Jack" Neubauer, formerly assistant general sales manager, has been promoted to general sales manager of **Standard Steel Works, Inc.,** North Kansas City, Mo., manufacturer of liquid transports, road construction machinery, agricultural equipment and steel shelving hardware.

J. K. Neubauer

Yale Materials Handling Division, **The Yale & Towne Mfg. Co.,** Philadelphia 15, Pa., promotes Newcombe C. Baker, Jr. to manager of marketing services and J. Henry Brown to advertising, publicity and sales promotion manager.

The promotion of F. G. Fabian, Jr., to the position of executive vice president of **Dresser Industries, Inc.,** Dallas, Texas, and that of Charles Kuhn, vice president and sales manager of Dresser Manufacturing Division, to president of the Bradford, Pa., subsidiary, are announced by H. N. Mallon, chairman of the board of Dresser Industries.

F. G. Fabian, Jr.

C. Kuhn

George B. Weinhold, appointed representative in the Ohio Valley area for the Lighting Sales Department of **Corning Glass Works,** succeeds Percy C. Saxton, retired.

Frank Jennings, former South Central district sales manager for the Machinery Division of **Essick Mfg. Co.,** Los Angeles 21, Calif., has been promoted to the new position of national field sales manager.

A. MacDonald Ferreira, whose appointment as general sales manager of **City Tank Corp.,** Corona, N. Y., was recently announced by John G. Hagan, Jr., president, plans to make a nationwide tour of distributors for City Tank's Roto-Pac and other units designed to help solve the sanitation problems of municipalities and private refuse collectors.

A. M. Ferreira

As director of automotive sales operations of **American Motors Corp.,** Detroit, Mich., V. E. Boyd will have general supervision of the departments of fleet sales, parts and service, business management, budget control and auditing.

Arthur S. Hicks has been named district manager for the Philadelphia area by **Centriline Corp.,** a subsidiary of Raymond International Inc. that specializes in renovation of underground pipe lines by cleaning and lining. Mr. Hicks was previously manager of water line sales for Dresser Manufacturing Division, Dresser Industries, Inc.

A. S. Hicks

Paul J. Wolfert is now director of sales for **Quick-Way Truck Shovel Co.,** manufacturer of mobile power shovels, cranes and other earth-moving equipment for industrial and military use. It is jointly owned by H&B American Corp. of Los Angeles, and Fairbanks Whitney Corp. of New York.

Election of three new officers of the **Badger Meter Co.,** Milwaukee 18, Wis., and expansion of the board of directors from five to seven was announced by James O. Wright, president and treasurer, following the company's annual meeting. New officers are: James G. Gridley, vice-president of the Industrial Products Division; Alexis G. Miller, vice-president of operations, and David L. Wright, assistant secretary.

Neptune Meter Co., New York 20, N. Y., names W. A. Balendock Dallas district manager to fill the vacancy caused by the recent death of George W. Cissna. And the company's Liquid Meter Division expands its Florida coverage by naming William D. Hart to handle water meter sales in the southern part of Florida.

W. A. Balendock

Chicago Bridge & Iron Co., Chicago 4, Ill., announces the election of Edward S. Fraser to the position of vice president — marketing. Mr. Fraser has been in charge of the company's manufacturing operations for the past six months, and previously has served as assistant general sales manager of the company, manager of its Salt Lake City plant, and as an engineer in Chicago.

E. S. Fraser

David R. Countryman has been named to the newly-created position of manager of research and engineering for **Douglas Fir Plywood Association,** Tacoma 2, Wash.

Lewis W. Youker, secretary and treasurer of the **Waukesha Motor Company,** Waukesha, Wis., has been named a member of the company's board of directors.

According to R. H. Koehler, general sales manager of the **Le Roi Division,** Westinghouse Air Brake Co., Milwaukee, Wis., future sales efforts at Le Roi will be pushed by two newly formed groups. One, headed by R. L. McChain as manager, construction and mining industry sales, will concentrate on the construction, mining and quarry industries. Working with him as assistant managers will be C. L. Meigs and N. W. Reinker. D. S. Permar, as

(Continued on page 220)

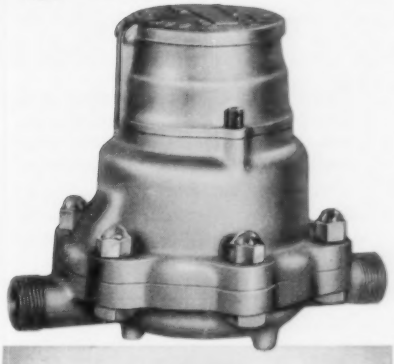
R. L. McChain

D. S. Permar

What Every WATER SUPERINTENDENT Should Know About

AMERICAN METERS

Accuracy



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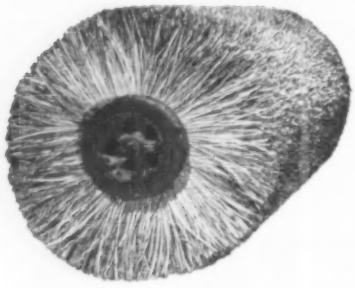

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About People

(Continued from page 218)

manager, general industrial sales, will be responsible for sales of large stationary and smaller unit type air compressors to the general industrial market. Aiding Mr. Permar, who will continue as assistant general sales manager, will be E. R. Couch, as assistant manager for industrial sales.

Robert E. Smith president of **Capitol Engineering Corp.**, Dillsburg, Pa., announces the election of Charles M. Bingham to the office of vice president.

Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., names M. M. York to the position of manager of marketing of the Industrial Equipment Division.

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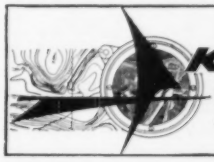

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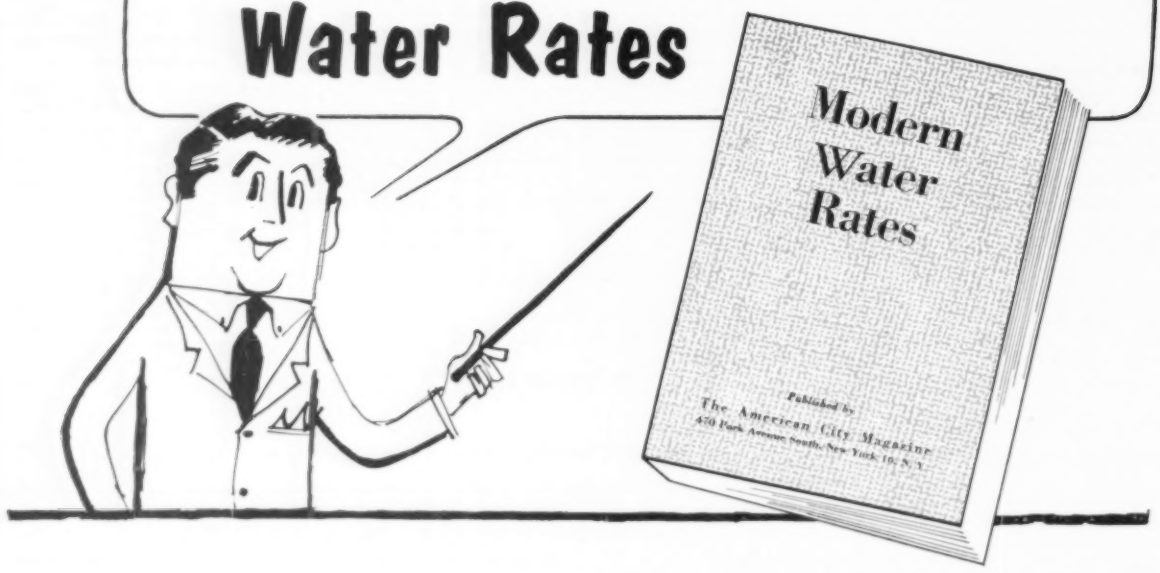

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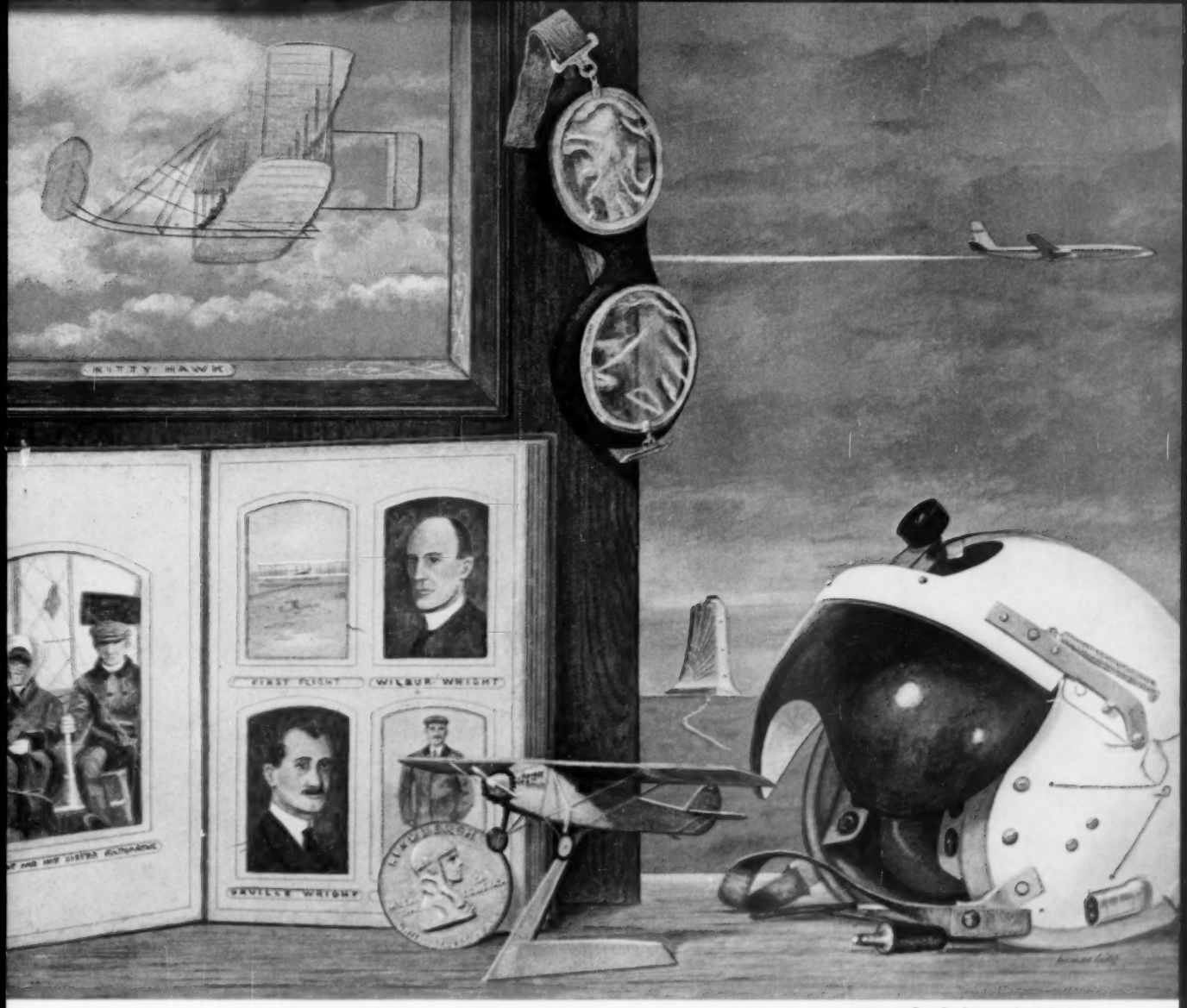

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60% faster loading trucks

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